Issued June 17, 1915.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE STATE OF ALABAMA, EMMETT O'NEAL, GOVERNOR;
REUBEN F. KOLB, COMMISSIONER AGRICULTURE AND INDUSTRIES;
EUGENE A. SMITH, STATE GEOLOGIST.

SOIL SURVEY OF ESCAMBIA COUNTY, ALABAMA.

BY

R. T. AVON BURKE AND J. M. SNYDER, OF THE U. S. DEPARTMENT OF AGRICULTURE, AND A. M. O'NEAL, JR., AND F. W. KOLB, OF THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1913.]

WASHINGTON:
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1915.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., November 2, 1914.

SIR: Under the cooperative agreement with the State of Alabama a soil survey of Escambia County was carried to completion during the field season of 1913.

I have the honor to transmit herewith the manuscript and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1913, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. D. F. HOUSTON,
Secretary of Agriculture.

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SOIL SURVEY OF ESCAMBIA COUNTY, ALABAMA.

By R. T. AVON BURKE and J. M. SNYDER, of the U. S. Department of Agriculture, and A. M. O'NEAL, Jr., and F. W. KOLB, of the Alabama Department of Agriculture and Industries.

DESCRIPTION OF THE AREA.

Escambia County is situated in the southern part of Alabama, adjoining the State of Florida. It is bounded on the north by Monroe and Conecuh Counties, on the east by Conecuh and Covington Counties, on the south by the Alabama-Florida line, and on the west by Baldwin County. It is quite regular in outline, except where the boundary across the northeastern corner is formed by the Sepulga River, and in the northwestern corner, where the boundary follows the Little River. With these exceptions the county forms a rectangle. It is 54 miles long from east to west and 18 miles wide from north to south, and has an area of 944 square miles, or 604,160 acres.

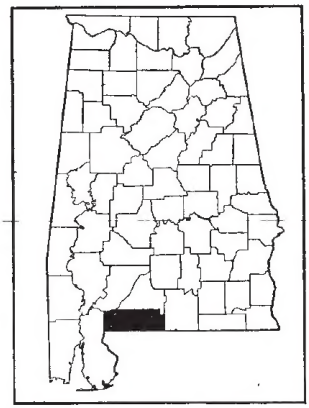

FIG. 1.—Sketch map showing location of the Escambia County area, Alabama.

The Conecuh River receives the greater part of the drainage. It enters Escambia County in the extreme northeastern corner and flows southwest to a point near the center of the southern boundary. The river follows a tortuous course and apparently decreases in velocity, becoming more sluggish as it approaches the Florida line, where evidences of many changes in its channel are indicated by cut-offs, dead rivers, and lakes in the low marginal bottoms. The principal tributaries of the Conecuh River are the Sepulga River and Murder Creek.

Little Escambia Creek flows in a southerly direction through Escambia County and with its tributaries drains the central part. The course of this stream is much more direct than that of the Conecuh River. Big Escambia Creek enters from Conecuh County near Conley and flows southerly at first and then southeasterly, leaving the county east of Flomaton. This stream with its tributaries receives the drainage of the west-central part of the county.

The extreme northwestern part of the county is drained by the Little River, a branch of the Alabama River. Perdido River drains

the southwestern corner of the county through Perdido and Brushy Creeks. A few streams heading in the vicinity of Canoe Station flow directly into Pine Barren River.

Escambia County may be divided into two general physiographic divisions, the uplands and lowlands. The uplands extend to the river and stream terraces and the lowlands include the terraces and bottom lands of the rivers and streams. The surface of the uplands ranges from level to gently rolling or rolling. The uplands consist of a series of broad ridges and divides interrupted by the ramification of a well-developed drainage system. In past ages this division was a great plain which was more or less continuous throughout the greater part of this county. The level of this ancient plain is marked by the tops of the present ridges, which have a general altitude of about 300 feet above sea level. The present topography is due to the action of streams working upon this plain.

As a rule the uplands merge gradually into the lowlands, although there may be a difference of nearly 250 feet in elevation. The transition, however, is frequently marked by steep, rough slopes, resulting from particularly severe erosion, and in a few places along the larger streams the bluffs are precipitous.

The lowlands comprise first, second, and third bottoms. The first bottoms are subject to frequent overflow. They are generally flat, although troughs and slight ridges are not uncommon features of flood-swept areas. The first bottoms vary in width from a few feet along the smaller drainage ways to a mile or more along the larger streams. Their most extensive development is along the Conecuh River.

The second bottoms generally occur at much higher levels, and are rarely inundated. They are generally flat, but slope toward the uplands, although locally surface wash from the uplands and the third bottoms has filled in the trough at the edge of the second bottoms, giving a slope toward the watercourses. The Conecuh River enters the county in a deep channel cut through the second terrace. This is also true of Big and Little Escambia Creeks, but their channels are not so deep, and the bottoms are more frequently flooded.

The third bottoms are less extensive than the first or second. They occur at much higher levels, and the surface varies from flat to gently rolling. The drainage is well established, and the terrace features are gradually being obliterated. The third bottoms are well developed between Murder Creek and the Conecuh River, and somewhat less so between the Conecuh River and Little Escambia Creek.

Escambia County was founded in 1868 from parts of Conecuh and Baldwin Counties. Pollard was the first county seat. The first permanent settlement in this section was made in 1816 near Burnt Corn Creek, not far from the present site of Brewton. Small settle-

ments soon sprang up along the main watercourses. Small areas in the stream bottoms were cleared and cultivated, as they were considered much more productive than the uplands.

The population of Escambia County is given in the 1910 census as 18,889. It is reported in 1900 as 11,320, and in 1890 as 8,666. The majority of the population is native born, although a large part consists of immigrants from other parts of Alabama and from neighboring States. About one-half of the population is in the towns and villages throughout the county.

The most important towns in the county are Brewton, Atmore, Flomaton, Pollard, Local, and Canoe Station. These towns are industrial centers, the chief interests being lumber milling and the handling of naval stores, supplemented by the ginning of cotton, the manufacture of cottonseed oil, and the manufacture of ice and various other commodities. Brewton, the county seat, has a population of 2,185, Atmore a population of 1,060, and Flomaton a population of 539. These towns have water and electric-light plants. Pollard has a population of about 600. A number of smaller towns and villages are distributed throughout the county.

Practically all of the towns have graded schools, and there are high schools at Brewton, Atmore, and Flomaton. Most of the towns are supplied with telephone service, but only a few rural telephone lines are in use. All parts of the county are reached by the rural delivery of mail. The towns and villages constitute good markets for many of the farm products of the county. Outside the county the principal markets are Pensacola, Mobile, Montgomery, Birmingham, Atlanta, Cincinnati, Pittsburgh, Philadelphia, and New York.

All parts of the county are reached by public and settlement roads, which follow old trails. They are usually kept in good condition. An effort is being made in the vicinity of Atmore, Pollard, and Brewton to extend the roads along section lines. More interest is being taken in road improvement. An abundance of good material for the construction of sand-clay and gravel-loam roads is available within the county. The streams are spanned by steel and wooden bridges, and travel is seldom interfered with by floods.

The central and western parts of the county have good railroad facilities. In the eastern section there is a large area in which there is no railroad, and produce has to be hauled long distances. The county is traversed by the main line and two branches of the Louisville & Nashville Railroad, by the Gulf, Florida & Alabama Railway, and the Escambia Railway.

CLIMATE.

The climate of Escambia County is mild and temperate, or almost subtropical. The conditions are such as to make possible the development of a widely varied agriculture. The summers are long, with a

mean temperature of 80.2° F. for the months of June, July, and August. The proximity of the Gulf of Mexico, which is only about 50 miles south of Escambia County, makes for the general uniformity of temperatures throughout the year. During the summer the winds are prevailingly from the south. The nights in summer are cool and pleasant, being tempered by cool breezes from the Gulf.

The winters are usually mild. Zero temperatures are extremely rare, the temperature seldom falling below freezing. The mean temperature for December, January, and February is 50.9° F. The winter temperatures are more variable than those of any other season. The winter months are characterized by mild weather, with recurrent cold periods 3 to 6 days apart. The changes are usually marked by rain and less commonly by snow flurries. The prevailing wind in the winter is from the west.

The mean temperature for the spring months, March, April, and May, is 67.1° F. The prevailing winds for this season are from the south. The mean temperature for the months of September, October, and November is 66.4° F.

The mean annual rainfall is 57.88 inches. The precipitation is heaviest during the summer months and lightest during the fall. In the summer and early fall the rains occur as showers, accompanied by southwest, west, and northwest winds. During the late fall, winter, and early spring they are generally accompanied by northeast, southeast, and east winds, and may last from 1 to 3 days. The precipitation is generally adequate for the successful growing of the crops commonly produced, and is well distributed throughout the year. Crops are rarely injured by drought.

The average date of the first killing frost in the fall is November 20, and the last in the spring, March 5, while the earliest recorded killing frost in the fall occurred October 17 and the latest in the spring, April 10. The county thus has an average growing season of 260 days. The soils of Escambia County, with the exception of those areas subject to annual overflow, can be used for crops of some kind throughout the year.

Good water is obtained in wells on the uplands at depths of 12 to 60 feet, while artesian water of excellent quality is obtained on the terraces at depths of 40 to 1,200 feet, and many springs occur throughout the county. One large spring, situated at Teddy, has an estimated discharge of 2,000,000 gallons per day.

The data in the table below are compiled from the records of the Weather Bureau station at Flomaton, which is located on the second bottom of the Conecuh River, at an altitude of 96 feet above sea level. The elevations in Escambia County vary from about 60 to 325 feet above sea level, and it is probable that this difference has some effect locally on the climatic conditions.

Normal monthly, seasonal, and annual temperature and precipitation at Flomaton.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	51.7	91	10	4.95	1.87	6.07
January	49.7	81	12	4.69	5.47	4.63
February	51.3	83	−3	7.48	3.89	11.59
Winter	50.9			17.12	11.23	22.29
March	62.2	92	22	4.79	3.15	7.31
April	65.9	92	27	3.48	4.86	7.04
May	73.2	98	40	4.36	4.13	2.25
Spring	67.1			12.63	12.14	16.60
June	79.1	103	50	4.85	1.35	12.96
July	80.8	104	58	6.60	3.90	7.83
August	80.6	104	60	7.16	2.07	3.91
Summer	80.2			18.61	7.32	24.70
September	76.4	100	38	3.59	2.28	6.11
October	65.6	98	29	2.60	.38	6.48
November	57.1	90	19	3.33	.81	1.92
Fall	66.4			9.52	3.47	14.51
Year	66.2	104	−3	57.88	34.16	78.10

AGRICULTURE.

Agriculture in Escambia County is in its infancy. Lumbering and turpentining have been the dominant industries of this county for many years. The merchantable timber has now been largely removed, and extensive areas are available for agricultural occupation.

At the time of the earliest settlement of the area now included in Escambia County the uplands were forested with longleaf yellow pine, and the bottom lands supported a growth of cane and mixed forest, including oak, poplar, birch, elm, ash, ironwood, gum, magnolia, cypress, bay, and sycamore, the cane being confined to the lower bottoms. The first settlements were made along the streams, where small patches were cleared and cultivated, the bottoms being considered more productive than the uplands. Corn, pumpkins, and peas were the first crops grown. Practically all of the settlers brought some live stock into the region, and stock raising soon became an important branch of agriculture. Pensacola was the principal market, the products of the county which were not needed for home

use being hauled to this point by ox teams and exchanged for hardware and other necessities. Lumbering became an important industry early in the history of the county, the timber being floated down the Conecuh River to Pensacola. The small areas cultivated by the settlers were used to supplement their interests in lumbering, upon which industry they chiefly depended. The cultivated areas of the individual holdings were usually very small. There were very few large plantations, such as those common to central Alabama, in this section. Cotton soon came to occupy a larger acreage than any other crop, being supplemented by corn, garden and truck crops, and some fruit.

The general industrial development of Escambia County was interrupted by the Civil War, and during the period of reconstruction which followed conditions were more or less chaotic. The construction of the Montgomery & Mobile, now the Louisville & Nashville Railroad, in 1860 was an important factor in the development of the county. A number of important towns were established along its route, and the largest of these, Brewton, became the county seat. As conditions became more settled the lumber and naval stores industries were established. Railroad spurs and logging roads were extended to all parts of the county, sawmills and turpentine plants were erected, and the clearing of both the uplands and bottom lands progressed rapidly. The acreage of cut-over lands has increased more rapidly than the population, so that extensive areas of productive land await occupation and development.

The chief crops of the county, named in order of their importance, are cotton, corn, oats, grasses, sweet potatoes, truck crops, peanuts, sugar cane, forage crops, Irish potatoes, tobacco, and rye, together with fruit and nuts. The tendency is toward a wider diversification of crops. The acreage of cotton is greater than that of all other crops combined, excepting corn, which has about the same acreage.

Cotton is the most important agricultural product of Escambia County. It occupies about one-third of the improved farm land area, and is the money crop of the county. The soils are admirably adapted to this staple. In many cases it is either the only crop produced or is grown in alternation with corn. It is grown on all the well-drained upland soils and on the higher terraces of the rivers and streams. The yields range from one-fourth to 1½ bales to the acre. The 1910 census reports a production of 4,834 bales of cotton from 14,509 acres in 1909.

The most common method of preparing the lands for cotton consists of bedding on the water furrows or middles of the previous year's crop, so that the water furrows extend along the old beds. This is usually done a short time before planting. A few of the more pro-

gressive farmers break the land flat in the fall, and the following spring the beds are thrown up for planting. This is a better method, and the additional labor is warranted by the increased yield.

The cotton is planted with one-horse planters on the tops of the beds. The cultivation is necessarily clean in order to destroy weeds and grass. When the plants are a few inches high, the beds are "barred off" by running a turn plow, or scooter, close to the plants so as to facilitate chopping or thinning with hoes. The soil is then worked toward the plants, away from them, and finally back at the last cultivation with shovels and sweeps, leaving the ridges with deep intervening water furrows. All subsequent work is done with a hoe to destroy the weeds and grass between the stalks.

The Greenville and Orangeburg soils are the most productive, and the Kalmia and Norfolk soils the least productive soils for cotton, less fertilizer being required on the former to equal the maximum yields of the latter. With proper methods of farm management the yields on all the soil types can be greatly increased.

The cotton-boll weevil is proving an important factor in the development of a better farming practice. The ravages of this insect necessitate the growing of quick-maturing varieties, more thorough preparation of the soil, earlier planting, and heavier fertilization of the crop. The prevalence of the boll weevil has a tendency to reduce the acreage in cotton, and this encourages the growing of a wider variety of crops and the raising of live stock. Such diversification is beneficial to the soils, and results in increased profits for the farmers.

Corn occupies almost as extensive an area as cotton. Nearly one-third of the improved farm land of the county is devoted to this crop. The 1910 census reports a production of 158,291 bushels from a total of 14,157 acres in 1909. The acreage devoted to corn remains about the same from year to year, but the average yields are probably higher than formerly on account of a greater effort being made to meet the home demands, which are constantly growing mainly because of the increasing number of live stock kept in the county.

The methods of preparing and cultivating the land are very similar to those used for cotton, although there is proportionately more land broken flat in the fall for this crop. The greater part of the corn is planted in beds thrown up over the old water furrows and cultivated just enough to keep down weeds and grass. Some of the farmers, however, plant the corn in water furrows and work the soil back and forth, the crop being laid by nearly level, or with a slight ridge. It is claimed that through this method there is less loss of soil moisture and that the yields are heavier.

Corn is produced on nearly all the soils of the county, with the exception of the wet or poorly drained lands. The yields range from 10 to 60 bushels per acre, although in a few cases 100 bushels or more are produced under intensive methods. Corn does best on the heavier soils, although there is little excuse for the low relative yields on the lighter soils, as they can be so developed as to produce three or four times as much as they do at present. On such soils heavier applications of organic and inorganic manures are required, but the increased yields more than compensate for the additional expense and labor.

Oats and rye are grown on somewhat less than 3 per cent of the area of improved farm land in the county. Oats greatly exceed rye in acreage, but both crops are important, and their acreage is increasing. In a few cases these crops are planted with a grain drill. As a rule the oats are sown broadcast over the fields and plowed in during the fall or early spring. A less common method is to plant in rows and cultivate once or twice.

Oats and rye are valuable cover crops, where grown alone or in conjunction with some legume, and their more extensive use, particularly sown in the fall, would be highly beneficial. As cover crops they not only afford feed or pasturage during the winter season, but protect the land from washing during the heavy rains of winter and early spring, and utilize plant food that would otherwise be lost by leaching or evaporation, while vegetable matter is added to the soil through the turning under of the stubble or the entire crop. Oats and rye do best on the heavier types of the Greenville, Cahaba, Orangeburg, Kalmia, Ruston, Tifton, and Norfolk series of soils. These crops require well-drained land and a thoroughly prepared seed bed.

Potatoes have until recently been an important crop only in home gardens throughout the county. According to the 1910 census a total of 137 acres was devoted to potatoes, with a yield of 10,439 bushels. This crop, however, is now being produced on a larger scale. The Green Mountain is the favorite variety. The potatoes are usually planted in February and dug in May. Northern-grown seed of early maturing varieties is used. The land is prepared and cultivated much the same as for corn, a deep and mellow seed bed being required. This crop does well on nearly all the soils of the county, except those subject to overflow or wet or poorly drained areas. The potatoes thrive under a greater range of moisture conditions than most crops. The yields range from 40 to 150 bushels to the acre, the smallest yields being produced on the sand or gravelly sand types and the heaviest yields on the sandy loams. The potatoes produced on the former soils are smoother and are said to be

of slightly better quality than those produced on the latter types and not so readily attacked by disease.

Sweet potatoes are produced only for home consumption or for local markets. In other parts of the State, particularly in Baldwin and Mobile Counties, sweet potatoes are grown on a commercial scale. They do well on the well-drained sand and sandy loam types of the county and yield from 100 to 300 bushels to the acre, depending upon the method of handling the soil and fertilization.

Two types of tobacco are produced in Escambia County—Cuban filler and Sumatra wrapper—both cigar tobacco leaf. Only a small acreage of the Cuban filler tobacco is grown, to supply a local cigar factory. It is grown on the Orangeburg fine sandy loam, but could be extended to the Orangeburg sandy loam as well as to the Greenville sandy loam, as they are especially good soils for this crop. The yields range from 600 to 1,000 pounds per acre. Somewhat over 25 acres are devoted to Sumatra wrapper tobacco. The acreage planted to this crop is being extended. It is now grown on the Orangeburg fine sandy loam, but is as well suited to the Norfolk fine sandy loam and Norfolk sandy loam. This tobacco is grown exclusively under a 9-foot slat shade, and one of the reasons for the slow increase in its acreage is the cost of erecting the shade, amounting to about $400 an acre. The yields range from 900 to 1,600 pounds per acre. These two types of tobacco require deep plowing, thorough tillage, and heavy fertilization.

Sugar cane in Escambia County is grown exclusively for the production of sirup. Only enough is produced to meet the demands of the local market and to supply home needs. The crop is grown on all the soils of the county, with the exception of those that are wet and poorly drained. It does not need the thorough drainage that the corn crop requires, but the best quality of sirup is made from cane grown on well-drained lands, where the yields are not so heavy as on the stream and river bottoms or the upland draws or swales. The best sirup is produced from cane grown on the light-colored and light-textured soils, such as those of the Kalmia, Norfolk, Ruston, and Tifton series.

The yields of sirup from sugar cane range from 150 to 400 gallons per acre, depending on the soil, the thoroughness of its preparation, and the amount of fertilizer used.

A wide range of grasses grow wild in this region. The grasses of Escambia County are mainly broom sedge, Bermuda, crab, carpet, wire, and "water" grass. The first four are more likely to be encountered in cultivated or abandoned fields, although broom sedge and carpet grass, in addition to wire and water grass, grow in thickly forested areas.

Bermuda is the most important grass, and is used to a small extent for summer pastures. It does best from the spring to early fall. It makes excellent pasture, and in some cases is cut for hay. This grass withstands severe droughts and protects the slopes from erosion. It is very persistent, but can be controlled by smothering with a dense shading growth of a crop such as cowpeas, or by plowing during the winter season. It can be grown on all the soils of the county except those which are permanently wet, but does best on the more fertile soils.

Crab grass is only important as a hay crop. It comes in thickly after cultivation has been discontinued and such crops as oats and truck have been removed, or with summer forage crops, such as cowpeas, to which it is an admirable addition. Crab grass when properly cured makes fairly good hay.

Johnson grass is not very important in this county. It is not popular, as it is difficult to eradicate. It does best on the heavier soils and could be utilized to advantage on some of the bottom types, particularly the Ocklocknee soils. It makes excellent hay and affords good grazing.

Broom sedge and the other grasses afford early spring or summer pasture for the herds of cattle which graze in the "piney woods," or cut-over lands of the bottoms.

The area sown to millet and sorghum is quite small, but there is a tendency toward the more extensive use of these crops. The varieties of millet grown are the common, German, and Hungarian. The millet is usually grown as a catch crop during the summer season for feed and forage, and is used to replace a cultivated crop when the stand is not thick enough and the season too far advanced to replant, as it matures quickly. It does well on the heavier types of the Greenville, Orangeburg, Ruston, Tifton, and Cahaba series.

Sorghum is rarely grown alone in this county, but often in combination with cowpeas for summer hay crops. This combination when properly cured makes a good hay. The best yields are harvested from the Greenville and Orangeburg soils.

The importance of the legumes and their relation to farming in the cotton belt are not generally recognized in Escambia County, although the soils and climate are suitable for the production of a large number of such crops. Some of these plants are most valuable as pasturage, while others are best used for hay or green manuring. They have a high feeding value, and their growth is of great benefit to the soil. Inoculation may be necessary to obtain the best results with crimson clover.

Some of the legumes have an important place in the present system of farming, particularly velvet beans, cowpeas, and peanuts. In

addition to these soy beans, vetch, bur clover, crimson clover, lespedeza, and Florida beggar weed succeed.

Velvet beans are grown by most farmers between the corn rows, being planted about the time the corn is knee high. This crop makes the best growth of any of the legumes, affords good grazing even for considerable periods after maturity, and produces seed. It leaves the soil in excellent condition for the succeeding crop. The velvet bean requires a long season to mature the seed, and some years few seed are matured. The yield of seed ranges from 30 to 60 bushels per acre, depending upon the condition of the soil. The crop does best on the sandy loams and fine sandy loams of the Greenville, Orangeburg, Ruston, Tifton, Cahaba, and Norfolk series, although it can be grown successfully on the sands and gravelly sands of the Ruston, Norfolk, and Kalmia series. It is highly beneficial to the soil.

Cowpeas are not grown as extensively as velvet beans, but they have an important place in the improved systems of farming. They are grown between the corn rows, and when the corn is harvested they are grazed down by live stock, or they are sown broadcast and harvested as hay or turned under as green manuring crops. In some cases sorghum is grown with the cowpeas, and this adds materially to the value of the hay. Still another method is to plant the cowpeas in drills, give them one or two cultivations, and harvest the crop for hay, or allow the plants to mature for seed. The Iron and Brabham varieties are most resistant to wilt and root knot.

This crop does well on all the well-drained soils of the county, but makes the best growth on the heavier types. With proper fertilization heavy yields are secured on the sands and gravelly sands. Cowpeas fit well into a large number of good rotations. The growing of cowpeas adds nitrogen to the soil and increases the supply of organic matter, which is particularly needed by the lighter soils of the county.

Peanuts, like cowpeas, are frequently grown between the corn rows, although a few fields are devoted exclusively to this crop. Hogs and cattle are usually turned into the field in the late fall. The Spanish variety seems to be the favorite. Where this crop is grown alone and is not pastured it is sometimes pulled for hay, and when cured the hay has a high feeding value. The nuts largely adhere to the vines. The removal of the vines and nuts is said to reduce the productiveness of the land, but where the crop is pastured it improves the soil and does much to increase the yields of succeeding crops.

The well-drained soils of the county, particularly the sandy loams of the Norfolk, Kalmia, Orangeburg, and Ruston series, are suitable for the production of peanuts. The application of lime is beneficial in most instances, and a good supply of organic matter is required.

Other important forage crops which succeed here are soy beans, lespedeza, vetch, and Florida beggar weed. The soy beans are grown like cowpeas, but they are not so popular, as the growth is not so heavy. They produce large quantities of seed, however, and have a high feeding value. The crop withstands protracted periods of dry weather unusually well, and is a good soil restorative crop, as the roots of this plant supply both nitrogen and organic matter to the soil.

Lespedeza, vetch, and beggar weed grow wild on some of the soils of the county. The first two are usually encountered on the moist, heavy soils of the Orangeburg and Greenville series, while the beggar weed is found on nearly all the light sandy soils. Lespedeza and vetch make their growth early in the season, while the beggar weed thrives in the late summer.

Among the fall and winter growing legumes, bur clover, winter vetch, and crimson clover are the most important. Bur clover is a valuable winter-growing annual. It does not make good hay, but affords nutritive food for cattle, sheep, and hogs during the winter and makes excellent pasture. Crimson clover and winter vetch can be utilized for winter grazing or allowed to mature and be turned under as a valuable green manure. They can be grown alone or in combination with oats, rye, barley, and wheat, making an excellent hay and affording a cover crop for protecting the lands during the heavy rains of winter and early spring. They could be used to especially good advantage as a binding growth on the slopes of those soils which are particularly susceptible to erosion. Where these crops have an important place in crop systems they aid materially in increasing the productiveness of the soil. The vetches do best on the heavy soils of the Greenville and Orangeburg series.

Vegetables are grown mainly in home gardens. In a few cases truck crops are grown for local markets and an effort is being made to extend shipments to outside points. The truck now grown in addition to Irish and sweet potatoes consists of turnips, collards, lettuce, cabbage, snap beans, English peas, beets, carrots, radishes, onions, peppers, squash, cucumbers, cantaloupes, melons, eggplants, tomatoes, celery, cauliflower, okra, and sweet corn. The vegetables shipped out of the county are tomatoes, onions, cabbage, cucumbers, beans, and melons.

Vegetables grow successfully on all the well-drained soils. The sand and gravelly sand types of the Ruston, Norfolk, and Kalmia series are admirably suited to the production of early truck, and all the sandy loam soils to medium and late vegetables. The light soils require relatively heavier fertilization, but this is in a measure offset by the higher price obtained on the early markets.

The fruits grown in Escambia County are peaches, plums, figs, apples, Satsuma oranges, Japanese persimmons, strawberries, and blackberries. Peaches and strawberries are the only fruits grown on a commercial scale. The chief varieties of peaches grown in the county are the Greensboro, Slappey, Carman, Belle, and Elberta. The fruit is of excellent quality. It has a good color and good shipping qualities. Peaches are grown commercially on the Greenville sandy loam and the Orangeburg and Ruston fine sandy loams.

With the exception of a few small patches around the homes of the more progressive farmers, the strawberries are grown in the large peach orchards. Large quantities are shipped from Atmore and Brewton, and from Castleberry, just north of the county line. The shipping season lasts from the last week in March to early in May. The yields vary from 100 to 250 crates to the acre, depending upon the character of the soil, the thoroughness of preparation, and fertilization. All the well-drained sandy loams and fine sandy loams are well suited to the production of strawberries, particularly the Greenville, Orangeburg, Ruston, and Cahaba soils. The lighter soils of the Kalmia, Norfolk, and Ruston series produce the earliest fruit, although the yield is not so heavy.

The blackberry grows wild and is found generally in abandoned fields, or along roadsides and farm fences. The yield of the fruit is heavy and the quality is good. It receives little or no attention, however, in this county.

Figs, apples, Satsuma oranges, Japanese plums, and persimmons are grown in some orchards, but no effort is made to produce these fruits on a commercial scale. They do well on the better drained soils of the county.

The nuts grown in the county consist of pecans, walnuts, chinquapins, and hickory nuts. With the exception of the pecan these grow wild throughout the forested areas.

The pecans are in many cases grown around the homes of the farmers, but not on a commercial scale. Most of the trees are seedlings, although a great many paper-shell varieties have been set out within recent years. It is reported that the pecan was found growing wild on the Cahaba and Kalmia soils by the early settlers. It apparently does well on the soils of the well-drained uplands.

But a small part of the farm land of Escambia County is plowed during the fall. Most of the farmers prepare the land for a crop immediately before planting, and the fields are usually left bare and unprotected during the winter and early spring, being exposed to the heavy rains of those seasons, with the resulting losses by erosion, leaching, and evaporation.

In general, the plowing consists mainly of bedding on the old water furrow. Such a method is unsatisfactory, as proportionately little of the soil is stirred. Even where the lands are flat broken the plowing is too shallow, rarely being over 4 inches.

The thinly settled condition of the country and the growing scarcity of labor make the use of labor-saving machinery desirable. The surface features are generally favorable for the use of such implements as disk plows and riding plows, deep tillage machines, walking and riding cultivators, mowing machines, harvesters and binders, weeders, drills, and harrows. The soils of the county are generally sandy, and a good tilth can be easily maintained. Heavier equipment is necessary where the clays are near the surface.

The expenditure for fertilizer has steadily increased. The 1910 census reports an expenditure of $75,466 for fertilizers, which gives some idea of the extent to which dependence is placed on commercial fertilizer. The productiveness of the greater part of the lands under cultivation is gradually being reduced under the existing methods of farming, and increasing quantities of fertilizers are required to maintain crop yields.

Fertilizers used vary widely in the percentage of available phosphoric acid, nitrogen, and potash. The most popular is a 10–2–2[1] mixture. Higher grade fertilizers, such as 8–2–2, 8–3–3, 10–3–3, 9–3–3, and 10–4–8 mixtures, are also commonly used. Kainit, phosphate rock (containing 14 and 16 per cent phosphoric acid) and nitrate of soda, blood and bone, fish scrap, cottonseed, cottonseed meal, and manure are used to a less extent. These fertilizers are applied in varying quantities, depending upon the soil and crop requirement. It has been the practice to apply all the fertilizer during the preparation of the seed bed, but the tendency is to apply the material at different stages of the growth of the crop.

Some of the farmers mix the fertilizer at home, using cottonseed meal, acid phosphate, kainit, nitrate of soda, and sulphate of potash. They find this practice cheaper, and better adapted to meet the special requirements of soils and crops. The use of commercial fertilizer has been found generally profitable on the well-drained soils of the county. More economical methods tend to reduce the expenditure for such material.

The maintenance of a good supply of organic matter, through the use of lot manure, green manuring crops, the incorporation of grain stubble, grass sod, etc., is important. Where the soil is rich in organic matter the efficacy of commercial fertilizer is greatly increased. The Tifton, Ruston, and Cahaba soils are less in need of fertilization

[1] Percentage of phosphoric acid, nitrogen, and potash, respectively.

than the Norfolk and the Kalmia, but more than the Greenville and Orangeburg series.

The systematic rotation of crops is not generally practiced in Escambia County. As a rule cotton or corn is grown on the same fields for a number of years in succession. The yields are maintained chiefly by the use of commercial fertilizer on the cotton lands and to a less extent on the corn lands, where more dependence is placed on the restorative effect of cowpeas, velvet beans, and peanuts grown in the corn middles, grazed down by live stock, and turned under.

In some cases cotton is grown for a few years and then corn for an equal period, while in others corn and cotton are alternated year after year. A less common method, but one growing in favor, is to follow corn with fall-sown oats, and when the oats are removed the following summer, the land is prepared for cowpeas either sown alone or with sorghum for hay or peanuts for hog pasture, the land being returned to corn or cotton the following year.

Although nearly all the farmers appreciate the differences in relative values of different types of soil for various crops, but little effort is made to use the soils for the purposes to which they are best suited. It is generally recognized that some kinds of garden truck and fruit do better on the sands and lighter soils than on the heavier types, while the same is true of corn and grain, and that cotton and tobacco make the best growth on the red uplands, while sugar cane and millet do best in the moist and less well-drained situations, yet the general practice is to grow crops indiscriminately on all classes of land without any attention being given to their special requirements. Little or no attention is given to the selection of particular varieties of the various crops grown, yet it is generally recognized that some varieties do better on certain soil types than others. It is an excellent practice to select seed from the best and most desirable plants in the field, to be planted upon the same type of land.

The live stock of Escambia County consists of cattle, horses, mules, sheep, hogs, and goats. With the exception of sheep these have increased in numbers with the development of the county. The 1910 census reports the value of domestic animals as $475,431. The present sheep are grade stock, while the hogs are Poland China, Berkshire, Duroc-Jersey, and their grades. The cattle are generally Jersey or Jersey grades.

The 1910 census reports 127,034 acres in farms in Escambia County, of which only 43,102 acres are reported as improved. The average size of the farms is about 76 acres.[1] About one-fourth of the farms are operated by tenants. The tenant system has not developed in

[1] Each tenancy is tabulated as a "farm" by the census, and the average individual holding is larger than the figure stated.

this county to the same extent as in the central part of the State, mainly because there were but few large plantations in this section before the Civil War, and the colored population is comparatively small. The farms are rented under two systems, for a share of the crop and for cash. Under the share system, where the landlord furnishes work stock, tools, fertilizer, etc., he receives one-half of the products, but where the tenant furnishes the stock, implements, etc., the landlord receives only one-third of the cotton produced and one-fourth of the corn. Under the cash system the rent varies from $1 to $5 an acre, depending upon the location and productiveness of the farm. The share system is the most popular.

The total value of all farm property in this county is reported in the 1910 census as $2,629,153. In the 1900 census it is given as $815,874. Farm land is valued at $10 to $100 an acre. The average value of land is given in the census of 1910 as $11.12, showing a material increase from the average value reported in 1900, $3.38. Tracts of 4,000 to 20,000 acres of cut-over land can be purchased for $6 to $7 an acre.

It is difficult to obtain efficient farm labor, owing to the higher wages paid in lumbering operations. Colored labor predominates. Where employed for the season farm laborers are paid from $10 to $25 a month, with board.

Day laborers are paid from 75 cents to $1.50 a day for periods of a few days when the farm work is pressing, from $1 to $1.25 for gathering and packing peaches, and 2 cents a quart for picking berries. During the cotton-picking season it is not uncommon for farmers to transport laborers 10 or 12 miles from and back to the towns each day. The census of 1910 reports a total cash expenditure of $44,325 for labor in Escambia County.

SOILS.

Escambia County lies within the physiographic province known as the Coastal Plain. The county may be divided broadly into the uplands, comprising the greater part of its area, and the first bottoms and terraces along the streams.

The upland soils are derived through processes of weathering from beds of sand, sand and gravel, or sandy clay of the Coastal Plain. The soils of the well-drained areas range from pale yellow to bright red. In the poorly drained areas, where there has been less thorough aeration and more general saturation, the colors are usually lighter and more mottled, owing to less oxidation.

Underlying these beds of sand, sand and gravel, or sandy clay at various depths, or exposed in local spots, are two geological formations, the St. Stephens limestone and the Grand Gulf formation.

The St. Stephens limestone outcrops along the Sepulga River and in the northeastern part of the county, while the Grand Gulf appears at the surface in many places throughout the other parts of the county. The Grand Gulf is superimposed on the St. Stephens limestone, and contributes in part to the deeper substratum of the Tifton and Ruston, and to a less extent of the Norfolk soils. The St. Stephens limestone is too far from the surface to contribute directly to the soil, although it has modified the local topography.

The soils of the upland division of the county vary from gravelly sand through sand and gravelly sandy loam to sandy loam and fine sandy loam and clay, and with the exception of two types they are generally well drained. They represent eight series, the Norfolk, Greenville, Plummer, Grady, Ruston, Orangeburg, Susquehanna, and Tifton.

In addition to the upland soils, Escambia County includes a class of soils of more recent deposition, although largely of similar origin. These soils consist of alluvium, and occupy the first bottoms and terraces of the rivers and streams. The terraces represent different stages in the history of the streams. The highest terrace is the oldest flood plain, while the present overflow bottoms are the most recently developed.

The main waterways were much larger and more active in ages past. They cut into the structural strata of the region, forming wide valleys, and deposited their load of gravel, sand, silt, and clay upon the floor of what was then the first flood plain. The materials were largely from the immediate uplands which the streams traversed, resulting from local outwash or direct erosion of the bluffs. The lower terraces were developed through erosion of the former flood plains during recurrent overflows. Only two terraces are generally encountered along the larger streams, although a higher terrace is developed in some places.

The soils of the terraces are grouped in four series—the Kalmia, Leaf, Myatt, and Cahaba.

The first bottoms, or those lands subject to frequent overflow, comprise Ocklocknee soils and Swamp. Swamp represents a condition rather than a soil type.

In some localities the soils merge, or grade into each other, in such manner that it is impossible to draw distinct boundary lines. Many of the types include spots or patches of other soils which are too small to be shown separately on the soil map. The soil of such small areas, however, can easily be recognized from the description of the individual types in the report. All of the types recognized in the county are described in detail in subsequent chapters of this report.

The following table gives the name and actual and relative extent of each soil type mapped in Escambia County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ruston fine sandy loam	135,104	22.1	Kalmia sand	7,872	1.3
Norfolk fine sandy loam	74,624	12.2	Myatt fine sandy loam	7,296	1.2
Ruston sand	51,712	8.5	Cahaba fine sandy loam	7,168	1.1
Swamp	41,984	6.9	Norfolk sandy loam	5,056	.8
Norfolk sand	41,280	6.7	Kalmia fine sand	4,672	.8
Kalmia fine sandy loam	38,592	6.3	Ocklocknee fine sandy loam	1,792	.3
Ruston gravelly sand	34,624	5.7	Plummer fine sandy loam	1,280	.2
Greenville sandy loam	28,096	4.6	Leaf fine sandy loam	1,216	.2
Ruston sandy loam	27,968	4.6	Grady loam	1,088	.2
Tifton fine sandy loam	26,368	4.3	Cahaba sand	1,024	.2
Ruston gravelly sandy loam	25,792	4.2	Kalmia sandy loam	896	.1
Orangeburg sandy loam	14,848	2.4	Norfolk gravelly sand	384	.1
Orangeburg fine sandy loam	10,752	1.8	Susquehanna clay	256	.1
Norfolk fine sand	10,688	1.8			
Ocklocknee clay	8,128	1.3	Total	610,560	

NORFOLK SERIES.

The surface soils of the Norfolk series are prevailingly gray, ranging from light gray to grayish yellow. The subsoils are yellow, and have a friable structure. These soils occupy nearly level to rolling uplands throughout the Coastal Plain. They are derived from unconsolidated deposits of sands and clays. The Norfolk series is represented in Escambia County by five types, the gravelly sand, sand, fine sand, sandy loam, and fine sandy loam.

NORFOLK GRAVELLY SAND.

The Norfolk gravelly sand consists of a gray sand underlain at about 6 to 8 inches by a pale-yellow sand, which extends to a depth of 3 feet or more. Throughout the entire 3-foot section from 25 to 50 per cent of the soil mass consists of rounded quartz gravel.

This type occupies the eroded slopes or edges of the high terrace, and is encountered in only a few local areas, particularly along Burnt Corn and Big and Little Escambia Creeks.

The type is cultivated in only one area, where it is used for the production of corn and cotton. The yield of corn is reported as 10 bushels and of cotton one-third bale to the acre. The presence of the gravel renders the soil porous and leachy, and it is not retentive of soil moisture. Only in seasons of excessive rainfall are the crops good on this type. The soil is too light for corn and cotton, but is well adapted to fruit and early truck. The maintenance of a good supply of organic matter is necessary to increase its moisture-holding capacity and insure good crop yields. Lands of this type are valued at $7 to $15 an acre.

NORFOLK SAND.

The soil of the Norfolk sand is a gray to light-gray sand. This grades at about 4 to 6 inches into a pale-yellow, loose, incoherent sand which extends to depths of 3 feet or more. This type includes two distinct variations or phases, which, however, are not distinguished on the map. The gravelly phase usually occurs on stream slopes or in eroded areas. In this phase the gravel content is not sufficient to warrant the classification of this soil with the Norfolk gravelly sand, although spots of Norfolk gravelly sand too small to map are encountered. In the other phase the soil consists of a loamy sand or light sandy loam, and the subsoil is slightly darker and more compact than the subsoil of the typical Norfolk sand. This phase is usually an extension of the typical soil as it approaches heavier types, and is, as a rule, particularly productive.

The Norfolk sand is encountered in all parts of the county, and its topography is variable. It occurs over gently rolling to rolling country, on the tops of ridges, and along the valley walls of streams. The areas are generally small. The largest occur in the eastern half of the county, and particularly south of the Conecuh River.

Only a small part of this type is under cultivation. Most of it is forested with longleaf pine, and where this has been removed the type supports a growth of oak and hickory. The soil is easily cultivated. It warms up early in the spring, and crops mature earlier on it than on any other type in the county except the Ruston gravelly sand. It is not very retentive of soil moisture and crops frequently suffer during periods of dry weather. Where cultivated it is used chiefly for the production of cotton and corn, and to a much less extent for garden truck and fruit. The yields of corn on this type range from 8 to 12 bushels, and of cotton from one-quarter to one-third bale per acre. An excellent grade of cigar-wrapper tobacco is grown on this type in Florida, but the yields are very light. The best yields depend upon the use of commercial fertilizers. This soil is rather light for general farm crops, but fairly good yields can be obtained by the frequent growing of leguminous crops. The Norfolk sand is admirably adapted to the production of early truck crops and fruit.

Land of this type is valued at $6 to $25 an acre, depending on location and improvements.

NORFOLK FINE SAND.

The Norfolk fine sand consists of a gray fine sand, underlain at 5 to 8 inches by a yellow or yellowish-gray fine sand which extends to a depth of at least 3 feet.

This type occupies the slopes bordering the streams or the crests of low, rolling ridges. In places it is so badly dissected by erosion as to have a hillocky topography. It is most extensively developed in the

eastern half of the county, though small areas occur in some of the western townships.

Comparatively little of the Norfolk fine sand is under cultivation. It usually supports a growth of longleaf pine, and where this has been removed the second growth consists of scrub oak. There is a more even growth of native grasses on this type than on the Norfolk sand, but the growth is very light as compared with that on the sandy loam types. This type is easily tilled and is generally well drained. Crops mature early, but not so early as on the Ruston gravelly sand or Norfolk sand. It is more compact and consequently more retentive of soil moisture than these types, and crop yields are somewhat heavier. Where cultivated this type is used chiefly for the production of corn and cotton, cotton having the greatest acreage. Cotton yields from one-third to one-half bale, and corn from 10 to 15 bushels per acre. A good grade of cigar-wrapper tobacco has been grown on this type, but the yields reported are light. The soil is somewhat light for best results with cotton and corn, but the yields could be materially increased by growing winter cover crops and leguminous crops for summer forage. This type is admirably adapted to the production of early truck. Such crops do not mature as early as on the Norfolk sand or Ruston gravelly sand, but the yields are heavier. The value of land of this type ranges from $6 to $25 an acre.

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam is a gray or yellowish-gray loamy sand or light sandy loam. Below a depth of about 6 inches it usually grades into a yellow loamy sand or light sandy loam. The typical subsoil is encountered at depths of 12 to 24 inches. It consists of a yellow friable sandy clay and usually has a depth of more than 3 feet. Occasionally a few small, rounded quartz gravel are distributed over the surface and throughout the soil section. This type differs from the Norfolk fine sandy loam mainly in having a greater content of medium and coarse sand.

The Norfolk sandy loam occurs on the tops of ridges, on divides, and on stream slopes. On the divides the surface varies from level to gently rolling, while on the slopes the topography is usually more rough and broken. The type has its most general distribution in the eastern half of the county, but a few small areas occur elsewhere.

The Norfolk sandy loam is generally quite uniform in texture and color of the soil and subsoil, but varies more or less in depth of the surface soil, which depends largely upon the extent to which it is subjected to surface wash. It is generally well drained and easily worked and crops mature much earlier on it than on the Norfolk fine sandy loam. Comparatively little of this type is under cultivation. It supports a growth of longleaf pine, with a scattering of oak, hickory, and

dogwood. Gallberry bushes and native grasses constitute the undergrowth, although the former are not so conspicuous as on the Norfolk fine sandy loam, while the grass sod is not quite so heavy, occurring more in bunches where the surface soil is deepest. Where the type is cultivated corn and cotton are the important crops. These are supplemented occasionally by oats, sugar cane, peanuts, cowpeas, velvet beans, garden truck, and fruit. The yields of cotton range from one-third to one-half bale, and of corn from 15 to 30 bushels per acre, while from the sugar cane 100 to 200 gallons of sirup are produced per acre. This type is not quite as productive as the Norfolk fine sandy loam, but is susceptible of great improvement. It is generally deficient in organic matter and the best results with crops can not be secured until an adequate supply of such material is incorporated. The most effective means of supplying organic matter is by turning under stable manure, forage, and grain stubble, grass sod, and green manuring crops. Too much dependence is placed on commercial fertilizers, which do not permanently improve the land. There is a need for the growing of a greater diversity of crops in systematic rotations. Lands of this type are valued at $6 to $40 an acre.

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam consists of a gray loamy fine sand underlain at 5 to 7 inches by pale-yellow or yellowish-gray fine loamy sand which extends to a depth of about 10 to 16 inches. Below this is encountered the typical subsoil, consisting of a pale-yellow friable fine sandy clay, which extends to a depth of 3 feet or more.

The Norfolk fine sandy loam is extensively developed in large but interrupted areas in the eastern and western parts of the county and to a less extent in some of the central townships. It is the second most extensive soil and covers 12.2 per cent of the county.

The Norfolk fine sandy loam includes a heavy phase which is restricted largely to the central and western parts of the county. The soil of this phase is quite similar in character to the typical material, but is shallower, rarely having a depth of more than 10 inches. The subsoil has a deeper yellow color and is heavier in texture, while a few iron concretions are scattered over the surface and throughout the soil and subsoil. This phase occupies gently rolling areas on the tops or crests of the ridges or divides. It is closely associated with the typical material, but is slightly more productive.

In addition to the above variation there is a light phase of this type which is limited in distribution to the areas south and southeast of Atmore. This is similar to the typical material in texture and color of the surface soil, but the subsoil is much lighter in texture.

It is compact and contains much less clay and silt, although the color is quite typical. This phase occupies level to gently rolling country and supports a growth of longleaf and shortleaf pine and some dogwood, with an undergrowth of gallberry bushes and native grasses. It is so level in places that water remains on the surface after rains. This phase in general has a value similar to that of the typical soil. With good drainage it is admirably adapted to early truck crops.

The Norfolk fine sandy loam as typically developed occupies level to gently rolling country. On the more nearly level areas, as on those of the light phase, the drainage is not well established. The forest growth consists mainly of longleaf pine, with a scattering of dogwood and shortleaf pine. The native grasses form a heavy sod, particularly in those areas which are less well drained. Where the original timber has been removed, scrub oak is quite common, while broom sedge and carpet and Bermuda grasses flourish in abandoned fields.

Comparatively little of this type is farmed. Where cultivated it is used for the production of cotton and corn, supplemented by oats, potatoes, sugar cane, and garden truck. Velvet beans, peanuts, and cowpeas are grown to a small extent. Cotton yields from one-third to two-thirds bale, corn 15 to 40 bushels, Irish potatoes 30 to 60 bushels, sweet potatoes 100 to 300 bushels, and sugar cane from 150 to 300 gallons of sirup per acre. Velvet beans, cowpeas, and peanuts are usually planted between the rows of corn, although the cowpeas and peanuts are sometimes grown alone for forage. The fertilizer most commonly used consists of 10–2–2 and 8–3 3 mixtures, applied in varying amounts. It is generally believed that equally as good yields can be secured by the use of stable manure. The difference in crop yields is the result of the different methods employed and the different quantities of fertilizer used.

This is considered one of the most productive types of the Norfolk series for general farm crops. It is easy to work, and when well drained it responds readily to good treatment. In Florida this soil is used for the production of Sumatra wrapper tobacco. It makes heavier yields than the Norfolk sandy loam and produces a leaf of excellent quality. Artificial drainage is frequently necessary on this type, and there is a general need for deeper plowing and more thorough tillage. An effective means of maintaining crop yields is by the more frequent use of leguminous forage crops in the rotations. Land of this type has a value of $6 to $50 an acre.

Greenville Series.

The soils of the Greenville series are prevailingly red, ranging from dark red to reddish brown in color. The subsoils are deep red or bright red, friable, usually free from mottling, and heavier than the

soils in texture. These soils are closely associated with those of the Orangeburg series in distribution. They occur in the southern part of the Coastal Plain, most abundantly in Georgia and Alabama and in areas where limestone or other calcareous rocks constitute an important part of the underlying geological formations. The Greenville soils are generally more retentive of moisture than the Orangeburg. They occupy level to gently rolling areas in the Coastal Plain uplands. Only one member of this series is recognized in Escambia County, the Greenville sandy loam.

GREENVILLE SANDY LOAM.

The Greenville sandy loam consists of a reddish-brown or very dark brown or dark-red, light sandy loam which grades quickly at 8 to 15 inches into a dull-red sandy clay. This passes gradually into a red, friable, mellow sandy clay which usually extends to a depth of 3 feet or more. Included in this type are small spots of Greenville fine sandy loam, which are so closely associated and intermixed with this soil that no separation is made.

This soil is derived from Coastal Plain deposits. It occurs on the broader divides of the county. It is rougher and more broken as it approaches the headwaters of branches and streams, or where it occupies the stream slopes. As a rule this soil is favorably situated for agricultural utilization.

The Greenville sandy loam has a much wider distribution than the Norfolk sandy loam, and occurs throughout the county. The largest areas are encountered in the northwestern townships. This type differs from the Orangeburg soils in having a darker and more reddish soil and less compact subsoil. It is locally known as "red land." It is generally recognized as a valuable soil for general farming, and the greater part of the type is under cultivation. The forested tracts support a growth of longleaf pine, with a scattering of oak, hickory, dogwood, and ash.

The Greenville sandy loam is the strongest and most productive upland soil in the county. Where cultivated it is used chiefly for the production of corn and cotton, supplemented by oats, potatoes, cowpeas, velvet beans, peanuts, garden truck, and fruit. Cotton yields from one-half to 1½ bales, corn from 20 to 75 bushels, Irish potatoes 40 to 150 bushels, and sweet potatoes from 50 to 250 bushels per acre. Velvet beans, peanuts, and, less commonly, cowpeas, are planted between the corn rows, while oats, cowpeas, and peanuts are frequently grown alone for pasturage or forage. Some very large and successful peach orchards are located on this type. The favorite varieties grown are the Greensboro, Slappey, Carman, Belle, and Elberta. In nearly all the peach orchards strawberries are grown between the rows of fruit trees. The Klondike is the favorite among the varieties of strawberries grown. Large quantities of strawberries

are grown for shipment. All kinds of garden truck do well, particularly tomatoes, onions, cabbage, lettuce, cucumbers, squash, turnips, collards, beets, radishes, English peas, navy, butter, and snap beans, cantaloupes, and melons.

The Greenville sandy loam has a high organic-matter content, is easy to work and well drained, and its topography is such that labor-saving machinery can be utilized to advantage. Cuban filler cigar tobacco is successfully produced on this type in other parts of this State and in Florida and Georgia, particularly where the soil is shallow. Where the surface sandy loam is deep both Cuban and Sumatra wrapper tobacco is successfully grown.

A wide diversity of crops is produced on this type, but they are not rotated systematically. The soil is admirably adapted to the production of truck, fruit, and forage in addition to corn, cotton, and tobacco. The yields are easily maintained or increased by keeping up the supply of organic matter and by systematic crop rotation, increasing the interval between corn and cotton and growing leguminous forage crops in winter and summer. Land of this type is valued at $15 to $100 an acre.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Greenville sandy loam:

Mechanical analyses of Greenville sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414439	Soil	1.7	13.3	15.2	22.6	10.2	27.5	10.1
414440	Subsoil	1.6	8.0	12.4	23.6	8.4	16.2	29.9

PLUMMER SERIES.

The Plummer soils are gray. They are frequently mottled with dark brown, and are underlain at 8 to 20 inches by light-gray, compact material, more or less mottled with streaks of brown and yellow. The lower part of the subsoil usually consists of sandy clay or sticky sandy material with pockets or layers of yellowish, plastic sandy clay. They are nearly always in a sticky condition, and water frequently stands on the surface after heavy rains. This series is typically developed in the flatwoods region of the Coastal Plain. In Escambia County only one member of this series is recognized—the Plummer fine sandy loam.

PLUMMER FINE SANDY LOAM.

The Plummer fine sandy loam consists of a gray loamy fine sand, underlain at about 6 inches by a light-gray sandy loam or loamy sand which grades at 15 to 24 inches into a gray, whitish-gray, or mottled gray and yellow fine sandy clay or heavy, sticky sandy loam.

This type is encountered in only a few small bodies. It occupies gentle slopes and depressed areas, usually around the heads of small streams. The drainage is poor, and nearly all areas of the type are saturated by the seepage from adjoining higher areas of Norfolk or Ruston soils.

This type is characterized by a growth of gallberry bushes and pitcher plants. It also supports a scattered growth of longleaf and shortleaf pine, with some bay, sweetgum, and cypress. It is not used for agriculture on account of the poor drainage.

The results of mechanical analyses of samples of the soil and subsoil of the Plummer fine sandy loam are given in the following table:

Mechanical analyses of Plummer fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414427	Soil	0.6	5.6	10.6	28.4	28.6	21.2	4.9
414428	Subsoil	.4	5.0	12.0	24.4	16.6	31.1	10.4

Grady Series.

The surface soils of the Grady series are generally dark colored, with mottled yellow and gray or yellow, gray, and red, plastic, heavy clay subsoils resting upon a limestone substratum. These soils are characteristically developed in low, flat situations in the Coastal Plain. They are poorly drained. The subsoil is partly residual in places from the underlying limestone. The Grady loam is the only representative of this series in Escambia County. It comprises those areas known locally as "sinks."

GRADY LOAM.

The surface soil of the Grady loam to a depth of 6 to 18 inches is a black or dark-gray silt loam. It ranges from a very fine sandy loam on the one side to a clay on the other. The subsoil is dominantly a gray or drab mottled with brown, stiff, sticky, plastic clay or silty clay. Frequently in the lower part of the subsoil mottlings of red are very pronounced. However, in some places the gray or drab color without such mottlings extends to a depth of at least 3 feet. Marginal areas of this type frequently consist of a heavy fine sandy loam which represents a gradation between the silt loam of the true type and the sandy loam soils which surround it.

This type occurs in many small areas in the western part of the county. It occupies saucerlike depressions and limestone sinks in the uplands, which are conspicuous features of the topography of the

region in which they occur. Such places have no natural surface drainage outlets. The surface is usually wet, and in many places, particularly where a thick growth of cypress occurs, it is inundated throughout the year. Mayhaw is a characteristic growth on this soil, and this together with cypress and a few pines constitutes the forest growth of the type. It is quite probable that this soil is derived in part from, or at least largely influenced by, the underlying limestone. The sags in which it occurs are formed by the dissolving and leaching out of the limestone and the dropping of the overlying strata.

The Grady loam has no agricultural value on account of its poor drainage. Where properly drained it is capable of producing good yields of corn, cotton, oats, and grasses.

Ruston Series.

The Ruston soils are gray, ranging to grayish brown. The subsoils are reddish yellow to yellowish red or dull red, and are moderately friable, consisting generally of sandy clay. Occasionally the lower subsoils are mottled with gray and shades of yellow. This series is intermediate between the Orangeburg and Norfolk series in the color of the subsoil, and between the Orangeburg and Norfolk on the one hand and the Susquehanna on the other in point of subsoil structure. All these soils are derived from material of similar origin, namely, unconsolidated deposits of the Coastal Plain. The Ruston gravelly sand, sand, gravelly sandy loam, sandy loam, and fine sandy loam are encountered in Escambia County.

RUSTON GRAVELLY SAND.

The surface soil of the Ruston gravelly sand is a gray, yellowish-gray or brownish-gray sand to a depth of about 6 to 8 inches. It is underlain by reddish-yellow, yellowish-red, or yellowish-brown sand which extends to a depth of at least 3 feet. Large quantities of small, rounded quartz gravel are disseminated throughout the 3-foot section. In local spots this gravel occurs in sufficient quantities to warrant the designation of such spots as gravel pits. The material from such places is used in the construction of public roads. This type is quite variable in color and includes small areas of Norfolk gravelly sand which have a yellowish subsoil. It also embraces small areas of Orangeburg gravelly sand, the subsoil of which is bright red.

The Ruston gravelly sand is confined to slopes and rolling areas lying between the more gently rolling uplands and the Swamp or natural drainage ways. The surface is hilly and rough in places, and is badly dissected by erosion.

The type is more generally developed in the central and western parts of the county, although it occurs on the slopes of streams in nearly all parts of the county. It is typically developed in the northern townships of Ranges 5 and 9 E., the central township of Range 6 E., and has a more limited and scattered distribution throughout the townships of Ranges 10, 11, and 12 E.

Very little of this type is under cultivation. It supports a forest growth of longleaf pine, with a scattering of oak and hickory. The native grasses occur usually in bunches and not as a uniform sod. Where cultivated the type is used chiefly for cotton and corn. The former yields from one-third to one-half bale and the latter from 8 to 20 bushels per acre. Occupying steep and frequently rough slopes this soil is not adapted to the economical production of field crops, but should be utilized for forestry and pastures, or for growing grapes, peaches, and early truck on a small scale. Land of this type has a value of $6 to $15 an acre.

RUSTON SAND.

The surface soil of the Ruston sand to a depth of about 6 to 12 inches is grayish-brown sand. It is underlain by a reddish-yellow or yellowish-red medium sand which extends to a depth of 3 feet or more. In a few places the surface soil is dark brown, owing to the presence of organic matter and to the oxidation of iron compounds. This type includes spots of Ruston coarse sand, and small areas which contain a few rounded quartz gravel. There are a few spots which have a red subsoil. These would be mapped as Orangeburg sand if of sufficient size to be shown separately on the soil map.

The Ruston sand has a very general distribution throughout the county. It is most extensively developed in the northern townships of Range 7 E. and in the central and southern townships of Range 8 E. The type occupies level to gently rolling country on the tops of the broader divides and more rolling country on the crests of narrow ridges, and the steep, eroded slopes of the valleys.

This soil is easily cultivated and well drained, and crops mature early. On the slopes it dries out rapidly and crops are frequently injured, but this is not so apparent on the more level uplands, where crops suffer much less than on the Norfolk sand in similar positions.

The Ruston sand supports a growth of longleaf pine, with a scattering of oak and hickory. Where cultivated it is used principally for the production of corn and cotton, supplemented by forage crops and garden truck. The yields of corn range from 10 to 25 bushels, and of cotton from one-third to one-half bale to the acre.

Oats, cowpeas, and peanuts are occasionally grown alone for forage, while velvet beans and peanuts are commonly grown between the corn rows both for soil improvement and for pasturage. This type

has a greater average percentage of organic matter than the Norfolk sand, but its organic-matter content is far from adequate for best results. Where the slopes are steep or rough the growing of cover crops, such as oats and vetch or rye and vetch, largely prevents erosion and at the same time provides a hay crop. To these bur clover and rescue grass may be added if only a winter pasture is desired. These crops add to the organic-matter supply and materially increase the productiveness of the soil. They are also advantageous in the more nearly level areas.

The Ruston sand is well adapted to early truck and fruit, while in other sections of this State and in Florida and Georgia a good quality of Sumatra wrapper cigar tobacco is grown. There is a general need for greater attention to rotation systems, to increase the interval between corn and cotton by the more frequent growth of leguminous forage crops.

RUSTON GRAVELLY SANDY LOAM.

The surface soil of the Ruston gravelly sandy loam consists of a yellowish-gray or brownish-gray light sandy loam or loamy sand, which grades at about 6 to 8 inches into a yellowish or reddish yellow light sandy loam. The subsoil is encountered at 10 to 20 inches, and consists of a reddish-yellow or yellowish-red, or mottled red and yellow, rather heavy sandy clay or stiff clay. Ten to 30 per cent of the type consists of small rounded quartz gravel. This material is scattered over the surface and distributed throughout both the soil and subsoil. In a few localities the surface is literally covered with the gravel. Occasionally in local spots the subsoil is quite heavy and stiff, and frequently in the lower part of the 3-foot section a mottled clay, resembling the subsoil of the Susquehanna series, is encountered.

The Ruston gravelly sandy loam is confined almost exclusively to the slopes between the more gently rolling uplands and the Swamp areas or alluvial soils in the bottoms. Small areas occur on a few of the knolls and ridges. Owing to its general topographic position, and the steepness of slope in some places, gullying and erosion are pronounced. The type is not under cultivation. A part of it, however, can be used advantageously for general farm crops, although it is best suited for pasturage and fruit growing. The greater part of the type is best adapted to forestry, mainly because of its liability to surface erosion.

RUSTON SANDY LOAM.

The Ruston sandy loam is a gray or light-brown sandy loam or loamy sand. It ranges from 5 to 15 inches in depth, and grades into a reddish-yellow or yellowish-red, friable sandy clay which usually extends to a depth of 3 feet or more. This rests upon the mottled

clays of the Grand Gulf formation, which in local areas, generally along the streams, are near the surface, the transition from the sandy clay to these mottled clays being quite abrupt.

The Ruston sandy loam has its most general development in the eastern half of the county, but small areas are found in nearly all parts. It occupies gently rolling to rolling country of the highest elevations. The topography is more rough and broken as the valleys are approached.

Only a small part of this type is under cultivation. It is largely covered with a growth of longleaf pine, with a scattering of oak, hickory, and dogwood. This soil is generally considered more productive than the Norfolk sandy loam. It is easy to work and generally well drained, and is quite retentive of soil moisture. Where cultivated it is used chiefly for the production of corn and cotton, and these crops are generally grown continuously in the same fields, the yields being maintained by the use of commercial fertilizer and the growing of velvet beans, peanuts, and cowpeas in the corn middles. The yields of cotton range from one-third to one-half bale, and of corn from 15 to 40 bushels per acre. On the deeper soils a good quality of truck is grown, but truck crops do not mature as early as on the sands and gravelly sands of this and the Norfolk series. Peaches and strawberries are successfully grown on this type.

The Ruston sandy loam is well adapted to general farming, and the yields of crops can be materially increased by more judicious treatment. The soil is in need of organic matter. The systematic rotation of crops is highly beneficial.

In the following table the results of mechanical analyses of samples of the soil and subsoil of the Ruston sandy loam are given:

Mechanical analyses of Ruston sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414425	Soil	0.6	9.0	22.0	40.8	8.2	14.6	4.6
414426	Subsoil	.9	4.4	8.2	20.6	17.6	14.1	34.4

RUSTON FINE SANDY LOAM.

The Ruston fine sandy loam in its typical development consists of a gray to grayish-brown loamy fine sand, which grades into a slightly reddish yellow loamy fine sand at 5 to 8 inches. At a depth of 12 to 30 inches a reddish-yellow or yellowish-red, friable sandy clay is encountered. This clay is usually much heavier than the sandy clay of the subsoils of the Norfolk and Orangeburg fine sandy loams, and

not infrequently the transition from soil to subsoil is quite marked. Included with this type are three distinct phases, or variations, which may be termed the concretionary, heavy, and red phases.

The soil of the concretionary phase is similar to the typical material in texture and color, but it is shallower, and scattered over the surface and throughout the soil are noticeable quantities of small, rounded iron concretions or accretions. These are as conspicuous as in the Tifton fine sandy loam. This phase occupies gently rolling to rolling areas in the western part of the county, and has a value similar to that of the typical material.

The heavy phase of the Ruston fine sandy loam is typical in color and texture of the soil and immediate subsoil, but within the lower part of the 3-foot section mottled clay, very similar to the subsoil of the Susquehanna clay, is encountered. This variation occupies the lower slopes of the stream valleys, and is badly eroded, the mottled clays of the deeper subsoil being exposed in places. It occurs in the north-central part of the county, and owing to unfavorable location is not well adapted to the economical production of crops.

The soil of the red phase consists of a grayish-brown or brown fine sandy loam 5 to 10 inches deep, passing quickly into a red or brownish-red, stiff, compact fine sandy clay. A large quantity of accretions are scattered over the surface and throughout the soil and subsoil. This phase is variable, and although the red subsoils predominate it includes local spots or streaks of typical Ruston fine sandy loam, the change occurring in places within a few feet. This phase is said to be slightly more productive than the typical soil. It occupies more elevated uplands, and is restricted to the western part of the county.

The Ruston fine sandy loam is the most extensive soil in the county. It is found in every township, but the largest bodies are in the western half, except for one covering several square miles east of Roberts.

The greater part of the Ruston fine sandy loam occupies gently rolling to rolling uplands. It usually overlaps the upper part of the valley walls, and if the cuts are very shallow it extends nearly to the watercourses. Where the trench is deep it is interrupted by other types, but frequently outcrops again just above the bottom. In such locations the heavy phase is usually encountered. As the type occurs on the slopes it is generally steep and badly furrowed as the result of surface wash. Where the upland divides are broad, local areas occur which are almost level. These areas include many sinks or depressions comprising the Grady loam, and drainage is not as well established as in the more rolling areas.

Comparatively little of this type is under cultivation. Where not cut over it is generally covered with a growth of longleaf pine, with a scattering of oak and hickory. The native grasses form a thick sod on this soil and are generally distributed evenly over the surface.

This type and the Tifton and Norfolk fine sandy loams produce the most luxuriant growth of native grasses in the county, and stock may be pastured throughout the year. Where cultivated, the Ruston fine sandy loam is used chiefly for the production of corn and cotton, supplemented by oats, potatoes, garden truck, and fruit. No definite system of crop rotation is practiced. Corn and cotton are grown in the same fields year after year, the yields being maintained by the use of commercial fertilizer and the growing of legumes between the corn rows. Some of the highest crop yields reported are secured on this type, and also some of the lowest, depending entirely upon the manner in which it is farmed. The type is easily improved and responds readily to judicious treatment. The yields of corn range from 25 to 50 bushels and of cotton from one-half to three-fourths bale to the acre. Oats are an important crop on this type and the yields are quite heavy. The grain is not thrashed, the crop usually being cut green for hay. Where velvet beans, cowpeas, and peanuts are grown they are planted between the corn rows and grazed by stock after the corn crop is removed. Peanuts and cowpeas are sometimes grown alone for hay or forage. All of the legumes do well and their culture is highly beneficial to the soil.

Some large peach orchards are located on this type. These orchards are successful, particularly on the highest elevations. The same varieties are grown as on the Greenville sandy loam. Strawberries are grown in rows between the trees. Heavy yields of garden truck are the rule, but such crops mature much later than on the Norfolk sand and Ruston gravelly sand. The production of Irish potatoes on this type is becoming an important industry. The yields range from 50 to 150 bushels per acre. The roughest and most broken areas and the steepest slopes along the streams are best used for permanent pastures or forestry. The grasses which would probably make the best pasture are Bermuda grass, bur clover, and orchard grass. These grasses largely prevent soil wash and afford grazing for stock in seasons when the growth of the native grasses is impaired.

The organic-matter content of this soil is low. An effective means of increasing the supply of organic matter is by adding stable manure or turning under an occasional green crop, preferably one of the legumes. A better method, perhaps, is to turn under such a crop after it has been grazed down by live stock. Deeper and more thorough tillage, the maintenance of the organic-matter supply, and the systematic rotation of crops, to include the legumes, are necessary for the best results on this type.

Orangeburg Series.

The Orangeburg soils are predominantly gray, ranging to reddish brown. The soils are open-structured and the subsoils consist of red friable sandy clay. This series is confined to the uplands of the

Coastal Plain, being most extensively developed in a belt reaching from southern North Carolina to central Texas. The soils, like the Norfolk soils, are derived from unconsolidated sands and clays. Two types of the Orangeburg series are recognized in Escambia County, the sandy loam and fine sandy loam. Drainage is well established in practically all areas of these types, and oxidation has proceeded to an advanced stage.

ORANGEBURG SANDY LOAM.

The Orangeburg sandy loam is a gray or grayish-brown sandy loam or loamy sand which has a depth of 5 to 24 inches and grades into a brick-red or red, friable sandy clay, extending to a depth of at least 3 feet and in places having a depth of more than 10 feet. Over the surface of this soil and throughout the subsoil are occasional iron concretions which are generally more conspicuous near the heads of draws and swales of the uplands. With this type are included local spots of Orangeburg or Greenville clay and Orangeburg sand, too small to be shown separately on the map. The clay usually occurs in eroded or washed areas and the sand in the more nearly level uplands. The type also includes a few acres in which the material conforms to that of the Orangeburg gravelly sandy loam type, containing a noticeable quantity of stained cherty gravel.

The Orangeburg sandy loam is derived from the weathering of Coastal Plain material, and occurs in all parts of the county, usually in small areas.

The topography of this type is variable, but the largest areas usually occupy the broad divides, having a gently rolling surface. The soil also occurs on the slopes of the river and stream valleys. The gravelly phase is nearly always found on the slopes or in eroded areas.

The Orangeburg sandy loam is recognized as one of the most important soils in the county for general farm crops. It is not quite as productive as the Greenville sandy loam but slightly more so than the Tifton fine sandy loam or the Norfolk sandy loam, and can be developed to a high state of productiveness. It is easily cultivated and is retentive of soil moisture, and crops rarely suffer, even during protracted dry periods, particularly where the soil is thoroughly prepared. Oak, hickory, and shortleaf and longleaf pine constitute the principal forest growth on the uncleared land. Where cultivated the type is devoted mainly to cotton and corn, and to some extent to garden truck and fruit, with occasional crops of sweet potatoes, sugar cane, and the legumes. Cotton yields from one-half to one bale per acre, corn 25 to 50 bushels, sweet potatoes 40 to 150 bushels, and sugar cane from 150 to 250 gallons of sirup. The yields depend upon the amount of fertilizer used and the treatment of the soil.

All kinds of garden truck do well, but such crops do not mature as early as on the sand types of the Norfolk and Ruston series. Peaches are grown successfully on the higher elevations. The fruit is of excellent quality and good color. The yields are occasionally reduced by frosts occurring late in the spring. A good quality of Cuban cigar-filler tobacco is produced on this type in this and other States, and the crop offers an excellent opportunity in this county.

The productiveness of this type is easily maintained or increased by the frequent employment of leguminous crops in crop rotations. Where the slopes are too steep for the economical production of field crops they are best used for permanent pastures.

Land of this type is valued at $10 to $75 an acre, depending mainly upon improvements and location.

ORANGEBURG FINE SANDY LOAM.

The soil of the Orangeburg fine sandy loam is a gray or brownish-gray loamy sand, underlain at about 6 inches by reddish-yellow fine sandy loam. The typical subsoil is encountered at about 10 to 18 inches, and consists of a light-red, friable fine sandy clay, which generally extends to a depth of 3 feet or more. This type includes spots of Orangeburg sandy loam and Ruston fine sandy loam, too small to be mapped separately. In local spots a scattering of small, rounded ironlike concretions or accretions are encountered in the soil and subsoil. These are much more conspicuous near the heads of swales and draws. Where the type has been exposed to surface wash or erosion the soil has been removed from small spots, and the underlying Greenville clay is exposed. Such patches are not sufficiently extensive to be shown on the soil map. In the central and northern part of the county, west and southwest of Wallace, a few areas are mapped with this type which differ slightly from the typical in that the subsoils are heavier and not quite so friable.

The Orangeburg fine sandy loam occurs in small, scattered areas in nearly all parts of the county, but it has a much more limited distribution than the Orangeburg sandy loam.

Only a small part of this type is under cultivation. The greater part of it consists of cut-over land or forests of pine through which there is a scattering growth of oak and hickory. Where cultivated it is used for the production of cotton, corn, oats, potatoes, sugar cane, velvet beans, and peanuts, named in their order of importance, with small patches of garden truck and a few fruit trees. Cotton yields from one-half to 1 bale, corn 25 to 60 bushels, sweet potatoes 200 to 300 bushels, Irish potatoes 60 to 100 bushels, and sugar cane for sirup 200 to 300 gallons per acre. The oats are not thrashed, but are used for pasturage or cut for hay, while the peanuts and velvet beans are planted in the corn middles and grazed by hogs

and cattle after the corn is harvested. The Orangeburg fine sandy loam is generally recognized as one of the strongest upland soils of the county for the production of general farm crops. It is slightly more productive than the Orangeburg sandy loam, but not quite so strong as the Greenville sandy loam. It is well adapted to general farm crops, such as corn, cotton, Cuban filler tobacco, fruit, and forage crops. The organic-matter supply is deficient on the greater part of the type.

The surface features of this type vary from level or gently rolling on the crests of broad divides to more rolling where the type occupies the crests of narrow ridges. In the more rolling areas of this type there is a tendency for the soil to wash, and the soils are shallower than usual. Deep plowing and the growing of winter cover crops are effective means of preventing this washing of the soil. The greater part of this type is favorably situated for the economical production of crops, as all kinds of improved labor-saving machinery can be utilized.

The value of land of this type ranges from $10 to $75 an acre, depending mainly upon location with respect to transportation facilities.

Susquehanna Series.

The Susquehanna soils are gray, ranging to reddish. The subsoils are mottled gray and red or gray, red, and yellow, and consist of plastic, heavy clay. The color of the subsoils varies, often being red, white, drab, yellow, and sometimes purple, although red practically always predominates, the other colors appearing only as mottlings in the lower part of the section. The Susquehanna series is most extensively developed in the higher part of the Coastal Plain, from the vicinity of Chesapeake Bay to central Texas. Only one type of this series is encountered in Escambia County— the Susquehanna clay.

Susquehanna clay.

The Susquehanna clay consists of a gray to brownish-gray fine or medium sandy loam or loam which has a depth of 1 to 5 inches and grades quickly into a heavy, plastic, sticky, impervious clay of an intensely mottled red and gray color. This clay extends to a depth of 3 feet or more. Where the subsoil material has been exposed to the action of the weather it has a rusty-brown color.

Where the sandy covering is 4 or 5 inches deep a fairly good tilth can be developed, but where the clay is near the surface the type is very difficult to cultivate. The only area of this type in the county large enough to be shown on a map of the scale used is at Teddy.

Where a good tilth can be developed, this soil is fairly well suited to general farm crops.

Tifton Series.

The Tifton soils are prevailingly gray, ranging to brownish gray. The subsoils consist of bright-yellow, friable sandy clay. Small iron concretions occur on the surface and throughout the soil section. The topography varies from flat to gently rolling, and drainage is good. The Tifton series extends through southern South Carolina and across Georgia into Alabama. The soils are sedimentary from the sandy clays of the Coastal Plain region. The Tifton series is represented in this county by only one type, the fine sandy loam. The Tifton series closely resembles the Norfolk. Its main characteristic is the presence of the small iron concretions. The subsoil is a deeper yellow than that of the Norfolk, having more of a greenish-yellow hue. It is also firmer and more compact.

TIFTON FINE SANDY LOAM.

The surface soil of the Tifton fine sandy loam is a gray or yellowish-gray loamy fine sand or light sandy loam, grading at about 4 to 6 inches into a yellow, light fine sandy loam. The subsoil is encountered at about 10 to 15 inches, and consists of a greenish-yellow, deep-yellow, or ocherous-yellow friable sandy clay. Small, rounded iron concretions or accretions are scattered over the surface and distributed to some extent throughout the subsoil. This type includes spots of Tifton sandy loam too small to be shown separately on the soil map.

The Tifton fine sandy loam is locally known as "pimply land." It occurs in all parts of the county, but is more extensively developed in the southern townships of Ranges 5 and 6 E., in the central and northern townships of R. 9 E., and in the southern townships of R. 13 E., while small areas are scattered throughout the townships in Ranges 10, 11, and 12 E.

The Tifton fine sandy loam occupies the more elevated areas in the uplands, and the surface varies from level to gently rolling, although it is rougher and more furrowed as the valley slopes of rivers and streams are approached.

Comparatively little of this type is under cultivation, the greater part of it being in unimproved cut-over lands or longleaf pine forests. Native grasses flourish, and the sod is thick and evenly distributed over the surface. Corn and cotton are the principal crops. Cowpeas, velvet beans, and peanuts are frequently grown in the corn middles, and there are occasional patches of oats, potatoes, and sugar cane. Cotton yields from one-half to three-fourths bale, corn from 25 to 40 bushels, sweet potatoes from 100 to 250 bushels, and Irish potatoes 40 to 100 bushels per acre. Sugar cane produces about 200 gallons of sirup per acre.

The Tifton fine sandy loam is slightly more productive than the Norfolk fine sandy loam, but not quite so productive as the Orangeburg fine sandy loam. It is well adapted to general farm crops and can be developed to a high state of productiveness. The greater part of this type is so situated that crops can be economically grown by the use of improved machinery. The soil is generally well drained and quite retentive of moisture. The pebbles referred to do not interfere with cultivation, and the soil is easily worked.

The systematic rotation of crops, thorough tillage, and the maintenance of a good supply of organic matter are the greatest needs of this type.

Land of this type is valued at $8 to $50 an acre, depending upon location with respect to markets and transportation facilities.

The results of mechanical analyses of samples of the soil and subsoil of the Tifton fine sandy loam are given in the following table:

Mechanical analyses of Tifton fine sandy loam.

Number	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414409	Soil	0.6	9.0	12.0	34.6	21.8	17.6	3.6
414410	Subsoil	.3	8.2	11.6	28.8	12.0	14.5	24.4

KALMIA SERIES.

The surface soils of the Kalmia series are gray, ranging to grayish yellow, and the subsoils are mottled gray and yellow. The series is developed along streams of the Coastal Plain region on terraces lying largely above overflow. It occurs most extensively in Mississippi and Alabama. The soils are composed largely of material washed from Coastal Plain soils, although along the larger streams issuing from the Appalachian Mountains and Piedmont Plateau more or less sediment from this region is mixed with the deposits. In the better drained situations the subsoils are yellow, the soils of such areas resembling very closely the corresponding members of the Norfolk series. Four members of the Kalmia series are mapped in this county, the sand, fine sand, sandy loam, and fine sandy loam. The surface soils of these types range to dark gray, and the subsoils consist of yellow gravelly sand or yellow, compact friable, sandy clay.

KALMIA SAND.

The Kalmia sand consists of a gray sand, underlain at about 5 inches by yellow or pale-yellow sand which extends to a depth of 3 feet or more.

The Kalmia sand has a very limited distribution in this county. It occupies level to undulating areas on the second bottoms of the rivers and larger streams lying from about 10 to 40 feet above the normal water level of the streams.

The largest areas are encountered in the bottoms of Sepulga and Conecuh Rivers. The type is developed in smaller areas along the Big Escambia, and in larger bands along the Little Escambia, Murder Creek, and Little River. The soil varies somewhat from the typical along the Little River.

The material was deposited largely before the streams had cut their present channels. This type is rarely inundated.

Only a small part of the Kalmia sand is under cultivation. It is mainly forested with a scattering growth of pine and oak. The soil is well drained and easily tilled, and crops mature early. Where it is cultivated, corn and cotton are the chief crops grown. Cotton produces from one-fourth to one-half bale, and corn 10 to 15 bushels to the acre. The value of this type is similar to that of the Norfolk sand.

The soil is fairly retentive of moisture, probably because of the compact nature of the underlying sand. It is a little light for corn and cotton, but is admirably adapted to the production of early truck crops. Lands of this type are valued at from $7 to $15 an acre.

KALMIA FINE SAND.

The Kalmia fine sand consists of a gray fine sand, underlain at about 6 inches by a pale-yellow or yellowish-gray fine sand which extends to a depth of 3 feet or more. This type has a smaller distribution than the Kalmia sand, but like that type it occurs on the second bottoms or higher terraces of the rivers and larger streams. It is well developed in small bands along the Conecuh and Sepulga Rivers, and Burnt Corn, Murder, and Little Escambia Creeks, and less well developed on the south side of Little River. The largest areas occur on the west side of Murder Creek in T. 2 N., R. 10 E., and the north side of the Conecuh River in T. 1 N., R. 11 E.

Comparatively little of this type is under cultivation. It consists mainly of unimproved cut-over lands or is forested with a scattered growth of pine, oak, and hickory. Where cultivated, it is used chiefly for the production of corn and cotton. The yields of cotton range from one-third to one-half bale, and of corn from 15 to 30 bushels per acre. This soil has about the same value as the Norfolk fine sand, but is slightly more productive on account of its compact subsoil, which makes it more retentive of moisture. It is more productive than the Kalmia sand, but not quite as productive as the Kalmia sandy loam or fine sandy loam. The type is well drained and easily cultivated, and crops mature early on it, but not as early as on

the Cahaba sand or Kalmia sand. This type is admirably adapted to the production of early truck. The yields of corn and cotton are greatly increased by the incorporation and maintenance of a larger amount of organic matter, and by rotation systems which utilize the interval between corn and cotton in the growth of leguminous forage crops. Lands of this type are valued at $7 to $15 an acre.

KALMIA SANDY LOAM.

The surface soil of the Kalmia sandy loam is a gray loamy sand to light sandy loam, grading at about 6 inches into a pale-yellow light sandy loam which extends to a depth of 12 to 20 inches. The typical subsoil is a yellow, friable sandy clay which extends to a depth of 3 feet or more. Drainage is generally good, but in places the soil is wet and poorly drained. In these areas the soil is slightly darker in color, and the deeper subsoil of pale-yellow, friable sandy clay is mottled with gray and drab.

The Kalmia sandy loam has a very limited distribution. It is restricted to two small areas in the vicinity of Pollard and two a short distance north of Teddy. It occupies level areas inclined slightly toward the uplands.

Nearly all of the type is under cultivation, but where the timber has not been removed it supports a mixed growth of various kinds of oak, in addition to pine, hickory, gum, and poplar, while gallberry bushes are conspicuous in the undergrowth. Where cultivated this soil is used largely for corn and cotton. Corn yields from 20 to 40 bushels and cotton from one-third to two-thirds bale to the acre. This is a more productive type than the Kalmia sand and Kalmia fine sand, and slightly more productive than the Norfolk sand, particularly for corn, although it does not mature crops as early as these types. It is necessary to establish artificial drainage in the poorly drained areas referred to either by the use of tile or, more economically, by constructing surface ditches to the watercourses. With good drainage, this soil is quite valuable for the production of general farm crops. Best results are had where a systematic rotation of crops, to include the frequent growth of leguminous forage crops, is practiced.

Land of this type is valued at $20 to $40 an acre, depending upon the location and improvements.

KALMIA FINE SANDY LOAM.

The Kalmia fine sandy loam consists of a gray or light grayish brown fine loamy sand. At about 6 inches this grades into a pale-yellow fine loamy sand which extends to a depth of 15 to 30 inches. Below this the typical yellow, friable sandy clay is encountered. In

places the drainage is poor, and the soil is darker in color, while the deeper subsoil is mottled with gray and drab.

The Kalmia fine sandy loam is the most extensive soil of the Kalmia series. It occupies level to undulating areas on the second bottoms or higher terraces of the rivers and larger streams. It is typically developed in the bottoms of the Conecuh and Sepulga Rivers, and along Murder, Burnt Corn, Big and Little Escambia Creeks, and some of the smaller streams throughout the county. The most extensive areas occur in the bottoms of the Conecuh and Sepulga Rivers. The type is rarely inundated.

Comparatively little of this type is under cultivation. It comprises cut-over lands, or forests of longleaf and shortleaf pine, with a scattering of oak and hickory, while in the poorly drained depressions birch, live oak, magnolia, and occasionally cypress are encountered. Gallberry bushes, in addition to native grass, are conspicuous on the type, and their presence gives rise to the local designation of the type as "gallberry flats."

Where cultivated this type is used mainly for corn and cotton, supplemented by oats, sweet potatoes, sugar cane, peanuts, and velvet beans. Cotton yields from one-half to three-fourths bale, corn from 25 to 45 bushels, sweet potatoes from 120 to 300 bushels, and sugar cane 200 to 250 gallons of sirup per acre. Oats are not thrashed, but are grown for hay. Peanuts and velvet beans are grown in the corn middles, and grazed by stock when corn is harvested.

The Kalmia fine sandy loam is much more productive than the Kalmia sandy loam, but is not generally so well drained and crops do not mature so early. With good drainage it is a valuable soil for the production of general farm crops. It is particularly adapted to corn, grass, and forage crops. Deeper and more thorough tillage, the maintenance of the organic-matter supply, and systematic crop rotation are the greatest needs of this type.

Lands of this type are valued at $8 to $50 an acre, depending upon improvements and location.

Leaf Series.

The surface soils of the Leaf series are light gray to gray. The subsoils characteristically consist of gray or mottled gray and yellow, compact silty clay, which grades downward into mottled red and gray or red and yellow, plastic clay, through which water and air move slowly. Iron concretions are common on the surface. These soils are developed on stream terraces in the Coastal Plain region. The Leaf series is represented by a single type in this county, the fine sandy loam.

LEAF FINE SANDY LOAM.

The soil of the Leaf fine sandy loam consists of a gray fine loamy sand or light fine sandy loam varying in depth from 6 to 10 inches. The subsoil is a mottled drab and yellow, heavy, plastic clay which is intensely mottled with red below a depth of 15 to 24 inches.

This type is inextensive in Escambia County. It occurs in a small area between Pollard and Herrington on the east side of the Louisville & Nashville Railroad, on the second bottom of the Conecuh River. It occupies level or depressed areas where the surface drainage is inadequate and where oxidation has been less active than in the Cahaba or Kalmia types.

This type is not cultivated. It supports a growth of mixed timber. Where properly drained it is a valuable soil for general farming, particularly for corn, grass, and forage crops.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Leaf fine sandy loam:

Mechanical analyses of Leaf fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414447	Soil	0.6	0.8	0.9	39.0	33.4	18.4	6.8
414448	Subsoil	.1	.2	.3	12.2	22.0	23.9	41.4

MYATT SERIES.

The Myatt soils are gray. The subsoils range from gray to mottled gray and yellow, and are practically impervious. These soils occupy the most poorly drained areas of the Coastal Plain stream terraces. They are mainly above overflow, but the surface is so flat that they remain inundated for long periods after heavy rains. They are closely associated with the Cahaba and Kalmia soils, and are composed of old alluvium, consisting of water-laid Coastal Plain material. The fine sandy loam is the only type of this series encountered in Escambia County.

MYATT FINE SANDY LOAM.

The surface soil of the Myatt fine sandy loam ranges from gray to almost black. It consists of a fine sandy loam and has a depth of 6 to 10 inches. The subsoil is a drab or gray mottled with yellow or brown fine sandy clay or heavy, stiff fine sandy loam which becomes heavier with depth. At 3 to 6 feet from the surface an impervious layer of gray to grayish-blue clay is encountered. This type includes patches of Myatt sand, Myatt sandy loam, and Myatt silt loam, too small to be shown separately on the soil map.

The Myatt fine sandy loam is well developed on the second bottoms of some of the larger streams of the county, and is usually associated with the Kalmia and Cahaba types, near the uplands. Small areas lie along various streams. The large main body lies along Big Escambia Creek in a wide strip. The type occupies level or depressed areas and is generally poorly drained, owing to the impervious underlying clay and the level topography. Over a part of the type water remains on the surface for several days after heavy rains. In such areas the soil is alternately dry and wet, and may be described as semiswampy. In depressed areas the type is inundated throughout the year. This land supports a scanty growth of pine, with gum, water oak, and, more rarely, cypress in the depressions. The undergrowth consists mainly of coarse sedge and pitcher plants. This soil is not used for agriculture on account of poor drainage. With good drainage, which may be economically established by constructing surface ditches, it is a good soil for grass, grain, and forage crops.

Cahaba Series.

The surface soils of the Cahaba series are brown, ranging to reddish brown, and the subsoils are yellowish red to reddish brown. The Cahaba soils occupy old stream terraces. They are largely above overflow, and comprise the best drained lands of these terraces. They are most extensively and typically developed in the Gulf Coastal Plain region of Alabama and Mississippi. The soil material consists of wash from the Coastal Plain soils, with some admixture along the larger streams from the Appalachian Mountains and Piedmont Plateau of material from the soils of those regions. Two members of this series, the Cahaba sand and the Cahaba fine sandy loam, are recognized in Escambia County.

CAHABA SAND.

The soil of the Cahaba sand is a gray or light-brown loamy sand or sand. At about 6 inches this grades into a yellowish-red or reddish-yellow compact sand, which usually extends to a depth of 3 feet or more. In places the color of the deeper subsoil becomes more intense with depth, and the material is slightly sticky.

The Cahaba sand is limited to a few small areas on the second bottoms or higher terraces of the rivers and larger streams. It is well drained and is rarely inundated. But little of this type is under cultivation. It supports a growth of longleaf pine, oak, and hickory.

Where cultivated, it is used chiefly for the production of cotton and corn. The yields of cotton range from one-third to one-half bale, and of corn from 15 to 30 bushels per acre. Much better yields of these crops are obtained on this type than on the Kalmia sand. The soil is easily tilled and crops mature early on it. It is particularly well

adapted to early truck crops. Yields are easily increased and maintained by the more frequent use of leguminous forage crops in the rotations. Lands of this type are valued at $10 to $25 an acre.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam consists of a gray to grayish-brown fine loamy sand, which passes into a reddish-yellow fine sandy loam at 6 to 8 inches. The subsoil, beginning between 8 and 18 inches, is a red to yellowish friable clay, which quickly becomes rather stiff and extends to a depth of 3 feet or more.

This type has a much more extensive development than the Cahaba sand, although its total extent in Escambia County is not large. It is limited to the second bottoms and higher terraces of the larger streams, being most widely distributed in detached areas along the Conecuh River. The type is rarely subject to inundation. Its surface varies from level to undulating, and the soil is usually well drained, although in spots near the other terraces the drainage is poor.

The greater part of this type is under cultivation, although small areas are forested with pine and, to a less extent, oak and hickory. This is generally recognized as the most productive soil of the second bottoms for general farm crops, and it has a value similar to that of the Orangeburg fine sandy loam. It is more productive than the Kalmia sandy loam, but crops do not mature so early. The soil is easily cultivated and is quite retentive of moisture, and under proper management crops withstand protracted periods of dry weather.

The Cahaba fine sandy loam is used chiefly for corn and cotton. There are occasional crops of oats and sugar cane, in addition to such crops as cowpeas, velvet beans, and peanuts. Cotton produces from one-half to one bale per acre, corn from 25 to 50 bushels, and sugar cane 200 to 300 gallons of sirup per acre. This soil is particularly adapted to the production of forage crops.

The incorporation and maintenance of a good supply of organic matter, thorough tillage, and the systematic rotation of crops to increase the interval between the corn and cotton crops by growing winter cover crops and summer forage are necessary to increase the productive capacity of this type. Land of this type is valued at $10 to $50 an acre.

Ocklocknee Series.

The Ocklocknee soils are prevailingly brown, ranging to dark gray. The subsoils are brownish or mottled brownish, yellowish, and gray. This series comprises the darker colored soils of the first bottoms of Coastal Plain streams. The soils are composed mainly of wash from the Coastal Plain soils. They are generally subject to overflow.

Two members of this series, the fine sandy loam and the clay, are encountered in Escambia County.

OCKLOCKNEE FINE SANDY LOAM.

The soil of the Ocklocknee fine sandy loam consists of a fine sandy loam, which is light brown or grayish brown mottled with drab, and varies in depth from 8 to 15 inches. The subsoil is light brown or drab, with occasional spots of brown, and consists of a silty clay, clay, or fine sandy loam, which continues to depths of 3 feet or more. This type includes very small ridges of Ocklocknee fine sand and spots of Ocklocknee silty clay which are too small to be shown on the map.

This type occurs in small areas south and southeast of Pollard, near the county line and along an affluent of Burnt Corn Creek at the north county line. It lies only a few feet above the normal level of the streams and is subject to heavy and protracted overflow. For the reclamation of this soil the construction of high levees along the river is necessary.

With proper protection from overflow and the establishment of good drainage it is a valuable soil for corn, oats, grass, and forage crops.

OCKLOCKNEE CLAY.

The Ocklocknee clay consists of a dark-brown silty clay, underlain at an average depth of about 8 inches by a somewhat lighter colored subsoil, consisting of a brown clay or silty clay which becomes faintly mottled with gray in the lower part of the 3-foot section. Occasionally at about 30 inches black spots resembling iron manganese are noticeable. There are large quantities of organic matter in both soil and subsoil. The type includes spots of Ocklocknee silty loam, Ocklocknee fine sandy loam, and even narrow ridges of Ocklocknee fine sand, or Bibb fine sand, too small to be shown separately on the soil map.

This type occurs principally along the first bottoms of Conecuh River, and is subject to frequent and heavy overflow. Some areas are smooth, while others are characterized by numerous swales or troughlike depressions.

With proper protection from overflow by diking and thorough drainage, this is one of the most productive soils in the county, particularly for corn, oats, grass, and forage crops. Its reclamation, however, is an expensive proposition.

Miscellaneous Material.

SWAMP.

Swamp consists of material which is extremely variable in texture. It comprises sand, sandy loam, and even clay, and ranges in color from gray to black. The Swamp areas are permanently saturated, and are inundated throughout the greater part of the year.

This classification includes a few small patches of Bibb sand and Ocklocknee fine sandy loam. Both of these occur in narrow bands near the channels of the large streams. The former is white or gray and the latter brown. In addition to these, two areas of mucky material are included. This material consists of a black, spongy mass of organic matter in an advanced stage of decomposition and containing but a small proportion of mineral matter. The largest of these areas occurs on the second bottoms of Big Escambia Creek, near the upland bluffs east of the point at which the Escambia Railway crosses Sies Moois Creek. The other area occurs on the second bottoms of the Conecuh River bordering the Swamp west and northwest of Herrington. More or less muck is encountered along the upland streams, but the proportion of mineral matter is much greater in such locations. Swamp is not used for agricultural purposes. With proper drainage it makes good pasture land and is capable of producing excellent crops of corn, oats, and grasses.

SUMMARY.

Escambia County is situated in the southern part of Alabama, along the Florida State line. It has an area of 944 square miles, or 604,160 acres. The topography varies from level or gently rolling to rolling. The Conecuh River receives the greater part of the drainage of the county.

The climate is mildly temperate. The mean annual temperature is about 66° F. For the summer months the temperature averages about 80° and for the winter months about 51°. The rainfall averages about 58 inches annually. The precipitation is greatest during the summer and lightest during the fall months. There is a growing season of 260 days.

The population, as given by the 1910 census, is 18,889. Brewton, the county seat and the largest town in the county, has a population of 2,185. Escambia County is one of the most important naval stores and lumbering counties in the State, and about 90 per cent of its area consists of cut-over lands and forests of pine and mixed timber. The agricultural development has been very slow until recently. During the past decade there has been a considerable increase in the acreage of improved land and a material gain in population.

Escambia County promises to become one of the most important agricultural counties in the State. Its topography and climate, wide diversity of soils, and abundant water supply are favorable to a successful agriculture, including the production of a wide range of crops and the development of the live-stock and dairy interests. The principal crops grown are cotton and corn, supplemented by oats

and potatoes, velvet beans, cowpeas, peanuts, garden truck, and fruit.

Twenty-eight types of soil, including Swamp, are mapped in Escambia County. The upland soils are grouped in eight series, the Norfolk, Greenville, Plummer, Grady, Ruston, Orangeburg, Susquehanna, and Tifton. The bottom-land or alluvial soils are grouped in five series, the Kalmia, Leaf, Myatt, Cahaba, and Ocklocknee, together with Swamp.

The Norfolk series is represented by five types, the gravelly sand, sand, fine sand, sandy loam, and fine sandy loam. The Norfolk fine sandy loam is the most extensive member of the Norfolk series and is widely developed throughout the county. Only a small part of this type is under cultivation. It is the strongest soil of the series for corn and cotton. Where good drainage is established it is well adapted to a wide range of crops, including leguminous forage crops, garden truck, and cigar-leaf tobacco.

The value of the Norfolk sandy loam is similar to that of the fine sandy loam, but the yields are not so heavy and crops mature earlier.

The Norfolk sand and fine sand types are not so well adapted to corn and cotton and the yields are generally light, the fine sand producing the heavier crops. These soils are best adapted to early truck and fruit. Truck crops mature earlier on the sand type.

The Norfolk gravelly sand occupies the eroded slopes of the high terrace. It is cultivated in only one area and crop yields are low.

The Greenville series is represented in Escambia County by only one type, the Greenville sandy loam. This is recognized as one of the strongest soils in the county for general farm crops, such as corn and cotton, potatoes, cigar-filler tobacco, oats, forage crops, and fruit. It produces the heaviest yields of cotton and corn of any soil in the county with the least fertilization.

The Grady series is represented by a single type, the Grady loam. The Plummer series also is represented by only one type, the fine sandy loam. Neither of these types has any agricultural value on account of poor drainage.

The Ruston series includes five types, the gravelly sand, sand, gravelly sandy loam, sandy loam, and fine sandy loam.

The Ruston gravelly sand is not adapted generally to the economical production of crops on account of its topographic position, but it is well suited to the growing of early truck and fruit in small gardens and orchards.

The Ruston sand has a much more extensive distribution than the gravelly sand. It is admirably adapted to the production of early truck crops and fruit. It is a slightly heavier soil than the Norfolk sand, and crops do not mature quite so early.

The Ruston gravelly sandy loam has a smaller extent than the Ruston sandy loam. Its topographic position is such that crops can not be as economically produced as on the latter type, and it should be used more for pasturage and forestry.

The Ruston sandy loam is not extensively developed in this county. It is adapted to the general farm crops, although the yields are not so heavy as on the Ruston fine sandy loam or the Orangeburg and Greenville sandy loams.

The Ruston fine sandy loam is the most extensive soil in the county. It is well adapted to the production of general farm crops such as cotton, corn, oats, potatoes, forage crops, garden truck, and fruit.

The Orangeburg series is represented here by the Orangeburg sandy loam and the Orangeburg fine sandy loam. The fine sandy loam is adapted to the general farm crops, such as cotton, corn, potatoes, cigar-filler tobacco, forage, truck crops, and fruit, and is generally recognized as a very productive type.

The Orangeburg sandy loam is adapted to the same crops as the fine sandy loam, and although the yields are not generally so high, crops mature earlier.

Only one type of the Susquehanna series is mapped in Escambia County, the Susquehanna clay. This soil occupies a small area and has little or no value at present on account of the great difficulty in developing a good tilth. It is a strong soil for the general farm crops where properly prepared.

Only one member of the Tifton series is recognized in this county, the Tifton fine sandy loam. This type is well adapted to the general farm crops. It is slightly more productive than the Norfolk fine sandy loam, but not as productive as the Orangeburg or Greenville soils. Comparatively little of it is under cultivation.

Four types of the Kalmia series are recognized in the county. These are the Kalmia sand, fine sand, sandy loam, and fine sandy loam. The Kalmia sand and fine sand are not adapted to the production of cotton and corn, and where these crops are grown the yields are light. The sand matures crops early, but yields are lower than on the fine sand. These types are admirably adapted to the growth of early truck crops and fruit.

The Kalmia sandy loam and fine sandy loam, where well drained, are adapted to general farm crops and particularly to forage crops. The fine sandy loam is the more productive of the two types, but the sandy loam matures crops earlier.

The Leaf series is represented by a single type, the Leaf fine sandy loam. This soil has no agricultural value on account of its poor drainage.

The Myatt series is represented in this county only by the Myatt fine sandy loam. This type has no agricultural value on account of poor drainage.

Two members of the Cahaba series are encountered, the Cahaba sand and Cahaba fine sandy loam. The former is well adapted to early truck, while the latter is one of the most productive soils of the river terraces for general farm crops.

The fine sandy loam and clay types of the Ocklocknee series are mapped in Escambia County. These types are subject to frequent overflow and crops are quite uncertain. Very little of this series is under cultivation.

Swamp consists of material which is extremely variable in character. It is permanently saturated or inundated, and is not used for agriculture.

The soils of this county are generally sandy. Their chief needs are the incorporation of organic matter and the practice of systematic crop rotations to include the more frequent growing of winter cover crops and summer forage.

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[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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U. S. DEPT. OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP
ALABAMA
ESCAMBIA COUNTY SHEET

STATE OF ALABAMA
EMMETT O'NEAL, GOVERNOR
REUBEN F. KOLB, COMMISSIONER
AGRICULTURE AND INDUSTRIES
EUGENE A. SMITH, STATE GEOLOGIST.

W. Edward Hearn Inspector Southern Division
Soils surveyed by R. T. Avon Burke, and J. M. Snyder, of the United States Department of Agriculture and A. M. O'Neal Jr., and F. W. Kolb, of the Alabama Department of Agriculture and Industries

Field Operations
Bureau of Soils
1913

LEGEND

Norfolk sand (Ns)	Cahaba sand (Cs)
Norfolk gravelly sand (Ng)	Cahaba fine sandy loam (Cf)
Norfolk fine sand (N)	Orangeburg sandy loam (Osl)
Norfolk sandy loam (Nl)	Orangeburg fine sandy loam (Ol)
Norfolk fine sandy loam (Nf)	Ocklocknee fine sandy loam (Of)
Ruston sand (Rs)	Ocklocknee clay (Oc)
Ruston gravelly sand (R)	Plummer fine sandy loam (Pf)
Ruston gravelly sandy loam (Rg)	Greenville sandy loam (Gs)
Ruston sandy loam (Rl)	Leaf fine sandy loam (Ll)
Ruston fine sandy loam (Rf)	Grady loam (Gl)
Kalmia sand (Ks)	Myatt fine sandy loam (Ml)
Kalmia fine sand (K)	Susquehanna clay (Sc)
Kalmia sandy loam (Kl)	Tifton fine sandy loam (Ts)
Kalmia fine sandy loam (Kf)	Swamp (S)

CONVENTIONAL SIGNS

CULTURE (printed in black)

DRAINAGE (printed in blue)

SOIL PROFILE (3 feet deep)

S —Sand
L —Loam
C —Clay
Fs —Fine sand
Sl —Sandy loam
Sc —Sandy clay
Hsc—Heavy sandy clay
Fsl —Fine sandy loam
Sic —Silty clay
Lfs —Loamy fine sand
Lsl —Light sandy loam
Fsc —Fine sandy clay
Sc —Sandy clay
Hc —Heavy clay

Scale 1 inch = 1 mile